Chemical Week

August 16, 1952

Price 35 cents

Faith in the future: More and more people buy a stake in chemical companies . . . p. 17

New chemicals bid for military, civilian heat-in-a-can fuel market . . . . . p. 24

How will energy-hungry process industries manage to satisfy their power needs? . . . . . p. 34

National Distillers' Hulse: He lays a heavy chemical foundation . . . . . p. 40

Antibiotics unscrambled: Here's the up-to-the-minute rundown on who makes what . . . p. 47

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Chemical Week

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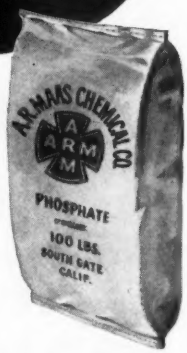

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OPINION . . .
Nature's Magic

"Why reeks the goat on yonder hill
Which feeds all day on chlorophyll?"*

Odds are you've heard that lilting couplet which is now being bandied about. Perhaps you chuckled, found it amusing. Perhaps you admired it, even as we did, because it scans so smoothly. Possibly, however, you paused to think about it a little more seriously and savored the acid cynicism and sneering skepticism it conveys. Rather cleverly, it scoffs at some of the dollar-chasing activities of a good many chemical specialty makers—and, we feel, with a good deal of justification.

It may be, we admit, that we are overly sensitive to glaring green ads; to blatant, vulgar radio commercials; to those hypocritical white-gowned "doctors" and "dentists" who leer out from television screens, wag an admonishing finger, and proclaim that all viewers reek. But that, we believe, is not our prime sensitivity. Rather, we are acutely sensitive to those activities which may harm their perpetrators and, more importantly, undermine the faith of the public in our industry.

Let's appraise just what attributes chlorophyll has and just where the current craze—with all its ridiculous exploitation—is leading us.

We have compiled over these past few months a fat file on chlorophyll—or, as the ad writers love to dub it, "nature's magic ingredient." And this is what we conclude from analyzing our data and from talking with many researchers and men in industry:

- Chlorophyll appears to have some worth in wound-healing salves and, in this connection, does curb odors. (Such ointments were originally sold, and still are, as ethical preparations.)
- It may have some anti-bacterial properties, may control the bacillus most frequently associated with dental caries. (A fair bit of research has been carried on in this field; it is suggestive but not conclusive.)
- The value of chlorophyll as a mouth deodorant (in dentifrices, etc.) has not been completely established. More research is needed. There are, among others, questions as to the concentration required, duration of effect

* Which probably was sparked by a comment in the Journal of the American Medical Association: "Satisfactory control tests have not been made with chlorophyll taken internally as a deodorant . . . One should consider the fact that many herbivorous animals, including the goat, consume large quantities of chlorophyll, and some of these are noted for their pungent aroma."

Ingredient

—if any. (The Food and Drug Administration, the Journal of the American Medical Association and the American Dental Association are all cautiously negative to noncommital on the subject.)

• The worth of chlorophyll as a systemic deodorant is decidedly open to question.

Nonetheless, with this background of ifs and buts, with a comparative dearth of objective research, specialty makers are incorporating chlorophyll in just about everything imaginable, giving free rein to their fancies in espousing miracle claims for their products. (Most advertisements, of course, are deftly phrased to leave an *impression* but concocted so that statements do not, in themselves, run afoul of the FTC.)

Here are a few chlorophyllated items which provoke our curiosity:

• Shampoos (How effective can chlorophyll be if applied, rinsed out immediately?)

• Cigarettes — "with chlorophyll added"

• Rug pads

• Aquarium ornaments — presumably to be used in aquariums bristling with plants and algae.

• Scouring powders

• Fabrics—for underwear

The list could run on *ad ridiculum*.

Let this, however, be clear. We are not saying that chlorophyll has no merit whatsoever. It may, in some cases, be of some worth. But there is, certainly, every reason to question whether it is a wondrous cure-all applicable to any and all uses that anyone may dream up.

In the long-term interest of the industry, including makers of specialties and of chlorophyll, we must, it seems to us, approach the problem soberly. Either we must police ourselves or invite policing by the FTC. As it stands today we are, unfortunately, issuing that invitation.

A few weeks ago a reader wrote us a note which said (*CW, June 21*): "Perhaps less harmful [than the promotion of anti-TB drugs] but certainly just as ludicrous is a lot of this nonsense about chlorophyll . . . So many of the claims are just plain silly . . . I feel it is nothing short of revolting.

"Chemists, chemical engineers, and scientists in general have built, over the decades, a solid reputation for being sound people, rational and intelligent and certainly responsible. It is nothing short of deplorable to see the efforts of many, the fruits of much

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OPINION . . . . . .

endeavor, dashed by irresponsible and giddy promotion . . .

"We have more to offer the world than mere huckstering. We should caution those who threaten to undermine our industry and our professions . . ."

To that we add a fervent "Amen."—**W. Alec Jordan,** *Editor.*

Stacked Cells

TO THE EDITOR: Having operated an experimental mercury chlorine cell, I am interested in Mr. White's new design as reported in CW (*July 19*).

It is interesting to compare his claims with mercury cell operating data published by MacMullin, Gardiner, de Nora, the Army FIAT Report No. 816 on German production, and plant cost data for recently DPA-certified plants.

With regard to plant cost, mercury inventory at $2.50 per pound adds up to about 12% for the usual plant. If the White design cuts inventory by one half, it will save 6%.

The data referred to indicate that about one half the mercury inventory is held up in the decomposer and sections outside the electrolyzer for the design where the decomposer is flooded with mercury.

As for Mr. White's stacking his cells four high, building costs for the conventional plant amount to approximately 16%–18% of total plant cost . . . so that stacking might save another 12% of the total. On the other hand, putting four cells in 7 ft. of headroom does not leave much for maintenance or anode adjustment . . . both of which can become extremely important.

The experimental German vertical type units are said to be capable of development up to 100,000-ampere size and may be the answer to building space conservation. Power and copper savings are inherent in Mr. White's design; however, voltage drops in the standard design cell busbars amount to only about 5% of the cell total.

Chlorine producers will welcome improvements which will reduce capital cost for mercury cell plants.

HENRY E. WESSEL
Senior Chemical Engineer
Midwest Research Institute
Kansas City, Mo.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

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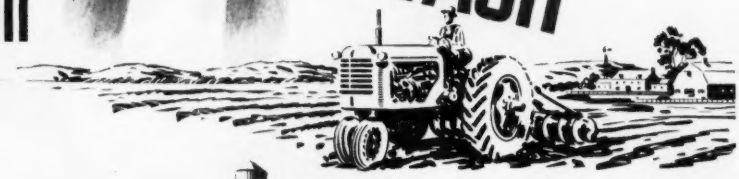

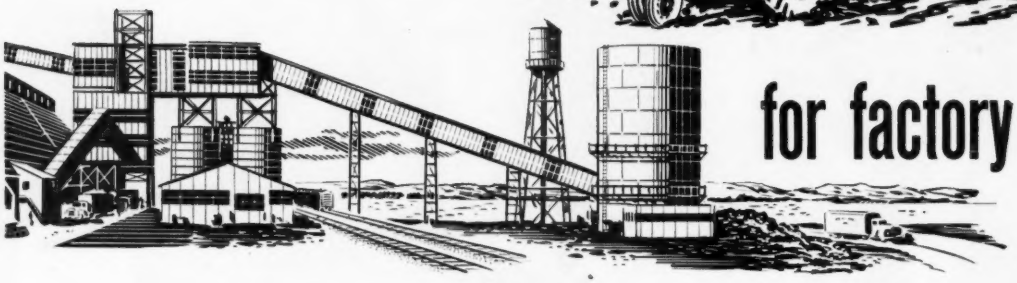

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NEWSLETTER

Slap on a control and somebody will always try to find a loophole. Plugging one of these loopholes is the aim of a new Commerce Department regulation, which its Office of International Trade started enforcing last week.

The new rule requires an exporter applying for a license to ship U. S. goods to Austria to show the Austrian import identification number on the application. The object: to guarantee that the goods will not be re-exported from Austria without OIT authorization.

Similar rules are already in effect on goods moving to the Belgian Congo and Sweden.

The government would like to see more stream pollution control projects, but the steel strike has thwarted its desire.

Even before the strike, says NPA's Water Resources Division Director Gerald Arnold, there wasn't enough steel, copper and aluminum to satisfy construction needs; and while NPA hopes to increase allotments of these critical materials for industrial waste disposal projects, the strike has postponed any such move.

"We had to postpone allotments for many desirable projects in the pollution control field," laments Arnold, "in order to make sufficient allotments available for completion of the most urgent projects."

Perhaps your senator or congressman can get you a copy of the Department of Agriculture's yearbook—just off the press—devoted entirely (all 952 pages) to insects and their control; if not, you can buy it from the Government Printing Office for $2.50.

Among the topics of prime importance to chemical men: insecticides and fumigants; pesticide hazards; control of more than 800 insects attacking men, livestock and crops.

Look for another strong contender in the cortisone arena. Monsanto is in the final design stages on a plant to produce it. The company has been researching on the steroid for some time, has been supplying intermediates to others.

An $18,415,000 certificate of necessity indicates the wide scope of Monsanto's plans, suggests that it has a process that can compete with those currently in use.

But it doesn't plan to start construction immediately.

Another pharmaceutical is making news halfway around the world in Viet Nam. Mutual Security Agency authorized purchase of Cotinazin, Pfizer's isoniazid TB drug, but cancelled it when the manufacturer offered to donate the initial 5,000-tablet shipment.

Here at home, a group of top blood specialists met in Washington under National Research Council sponsorship to discuss Chloromycetin.

Although no public announcement was made, the sentiment among many of them was that use of the drug should be limited—pending a thorough investigation—to infections that don't respond to any other antibiotic.

A slag upgrading process developed by Tennessee Valley Authority engineers may prove to be a boon to elemental phosphorus producers.

The electric-furnace slag is more than doubled in value by converting it to a light-weight aggregate useful in the manufacture of concrete building blocks. The slag is expanded while hot to form a spongy mass, which is then cooled and crushed.

Developed through the pilot-plant stage and tested on a still larger scale, the process will be tried out commercially by a private concern; two other firms are nibbling at the idea. TVA says it "has not yet taken steps toward the building of a commercial-scale plant."

Look for another petroleum company to take the plunge into petrochemicals. Continental Oil Co., which recently bought Stepan Chemical's detergent facilities (*CW*, July 19), is now discussing with several chemical firms the possibility of a joint venture in petrochemical production.

Excessive advertising claims were a factor behind the Department of Agriculture's recent cautionary statement regarding soil conditioners (*CW* Newsletter, July 26). "The facts are too far behind the fancy," a USDA spokesman told a group of agronomists. "We might well question whether all companies advertising these products have data to show that the benefits . . . are worth the cost."

Overplayed or not in the advertising copy, soil conditioners are still a solid piece of business—and another chemical is now going after its share: Carboxymethyl cellulose is the principal ingredient of the product Terrasol, made by Drum Chemical Co. (Brooklyn), sold in New York department stores at $2 a pound, 4 pounds for $7.50. One pound is claimed to treat 60 square feet of soil.

Makers of rayon and synthetic fibers are getting set for the Department of Labor's public hearing September 4 to consider redetermination of prevailing minimum wages in the textile industry. Synthetics are affected, of course, as well as the natural fibers. The textile unions are asking for a $1.13 minimum, with escalator clauses and fringe benefits.

Pollution of the Houston Ship Channel and the air above it is provoking the wrath of local health authorities.

First to feel the brunt is Mathieson Chemical, which has been ordered to abate its air pollution by August 25 or face an injunction.

Mathieson isn't the only offender, of course, but no plant along the Channel wants to sink money into control facilities unless all do. "What's the use of our spending thousands . . . when . . . another plant . . . will still be polluting the whole area?" asks one firm.

Likely possibility: If the Mathieson case goes to court, other firms will be cited as defendants in the same suit.

The CIO has further clarified its stand on codetermination, the German scheme whereby labor has a voice in management (see p. 12):

Recognizing the different backgrounds, relationships, traditions and histories in different countries, CIO sympathizes with German labor's demand for codetermination, British labor's demand for nationalization—but doesn't favor them here.

In pushing for industrial planning through joint management-labor-government-consumer councils, CIO has, it says, quite the opposite aim: to prevent socialism by preventing breaking of free enterprise.

. . . The Editors

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color	● Maximum 15 Hazen Scale

Typical reactions of TRIETHYL ORTHOFORMATE

$HC(OC_2H_5)_3 + ROH \rightarrow HC(OR)_3 + 3C_2H_5OH$
Alcohol → Trialkyl (Aralkyl) Orthoformate

$HC(OC_2H_5)_3 + RR'C=O \rightarrow RR'C(OC_2H_5)_2 + HCOOC_2H_5$
Carbonyl Compound → Acetal or Ketal

$HC(OC_2H_5)_3 + CH_2(CN)_2 \rightarrow C_2H_5OCH=C(CN)_2 + HCOOC_2H_5$
Malononitrile → Ethoxymethylene Malononitrile

$HC(OC_2H_5)_3 + CH_3CBrHCOOR + H_2 \rightarrow (C_2H_5O)_2CHCH(CH_3)COOR + C_2H_5OH + HBr$
Alpha-Brom-Propionic Ester → Acetal of Formyl-Propionic Ester

$HC(OC_2H_5)_3 + C_6H_5COCH_3 \rightarrow C_6H_5COC_3H_7 + HCOOC_2H_5 + C_2H_5OH$
Acetophenone → Phenyl Propyl Ketone

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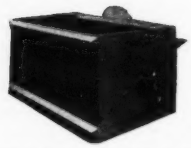
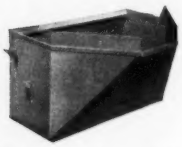
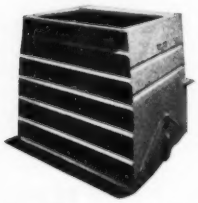


Drop Bottom Container built up to 10 cu. yd. capacity to handle heavy materials.

Tank Type Container meeting A.S.M.E. specifications. Capacities up to 1,200 gallons.



Tilt Type with Converged Lip for handling fine aggregate, wet or fluid materials.



Drop Bottom Pressed Steel Type for lighter service.

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BUSINESS & INDUSTRY . . . . .

Long and Short

"If it weren't for the steel strike" has now become a favored phrase among Washington mobilizers of almost every strata.

And certainly, the strike has overshadowed the more "normal" duties of the mobilizers. In effect, the strike has given the agencies a new mental outlook, since it is difficult to keep morale high in the face of staff cuts, and putting active controls into mothballs.

Much of the burden of the strike has gone to the divisions with the power to allocate and distribute steel in its many varieties, but the added activity has also made its way to such groups as the National Production Authority's chemical division.

Short Glance: The chemical men this week were preparing for possible short-term supply dislocations on the steel by-product coal-tar chemicals.

The actions they were planning would go something like this: If some defense-supporting industry is unable to buy a quantity of a specific chemical, and the producer of the chemical has it on hand but is planning to sell it elsewhere, NPA could issue a directive to the producer telling him to reserve a quantity for defense use, and then authorize the user to buy from this producer.

About the only chemical that seems to be in especially short supply is pyridine, but this has been relatively short for some time. There are chances, however, that other coal chemical shortages will develop, owing to the amount of time that it takes to produce some compounds from the tar raw material.

Actually, NPA doesn't want to issue any directives. It hopes that manufacturers will, through informal allocations, be able to avert emergency shortages. But government machinery is ready, just in case.

Long Look: Directives and allocations are a short-range activity of the division, but work on this level certainly doesn't preclude activity on a further-reaching plane. Others in the division are still working on the broader aspects of mobilization—the expansion of productive capacity.

Only a few chemicals still remain which will be covered by specific expansion goals. Of the total 150-odd goals which have been set so far, about 70 were for chemicals. Perhaps 10 others are still to come.

(NPA, incidentally, is preparing an official tabulation of these goals. It is expected late this week.)

But while there are only a few chemicals left on which specific goals are to be set, this doesn't mean that these are the only commodities which will receive tax help.

Many chemicals are such specialized materials that only a few certificates would be granted. For these, NPA-DPA sets up informal goals.

But whether or not further expansion is carried out under a formal or informal goal, the flood of fast tax write-offs is almost over. The lists have been long (*see p. 14*), but these are soon to be a thing of the past.

Mobilizers (if one forgets the steel strike) are about ready to relax. They may well do so. Their job is almost done.

For and Against

The National Petroleum Council and Secretary of the Interior Oscar Chapman are squabbling again on the subject of synthetic fuels.

Chapman, in the Interior Department's annual report to Congress, said it would be "prudent" to the nation's security to build a liquid fuel-from-coal plant now. Such a plant would assure "that we be fully prepared when the time comes."

NPC, in rebuttal, said that the plant which Chapman and the Interior Department are plugging is not really a synthetic fuel plant, but rather, "a plant where synthetic fuels are a by-product" of chemical production. In addition, NPC stressed the point that even production of a modest percentage of the nation's fuel needs via hydrogenation would mean serious overproduction of the accompanying chemicals (*CW, Oct. 20, '51*).

Chapman, in turn, repeated his April recommendation that such a plant be constructed by industry, with monetary assistance from the government. In this, he at least tacitly underscored the point which Ebasco Services made when it reviewed Interior's cost estimates on such a project (*CW, Apr. 26*): Private capital would be unable to finance such a program and still get a return on investment high enough to balance the risks. (This Ebasco statement, incidentally, has been well emphasized by NPC in its fight on the subject.)

For the present, the whole question is still rather academic. As with so many other topics concerning the government in one way or another, the present political flux means that any decision will be postponed at least until after November.

Plus and Minus

The U. S. Public Health Service, despite the Delaney commitee's stand, will continue to advocate fluoridation to minimize tooth decay. But its program will emphasize both addition and subtraction of fluorides.

The agency contends that it may take such action under its authority to promote public health. Despite the statement by Delaney committee member Miller that the service went "beyond the scope of its duties" (*CW, July 19*), the agency will continue its present program "unless it hears from Congress."

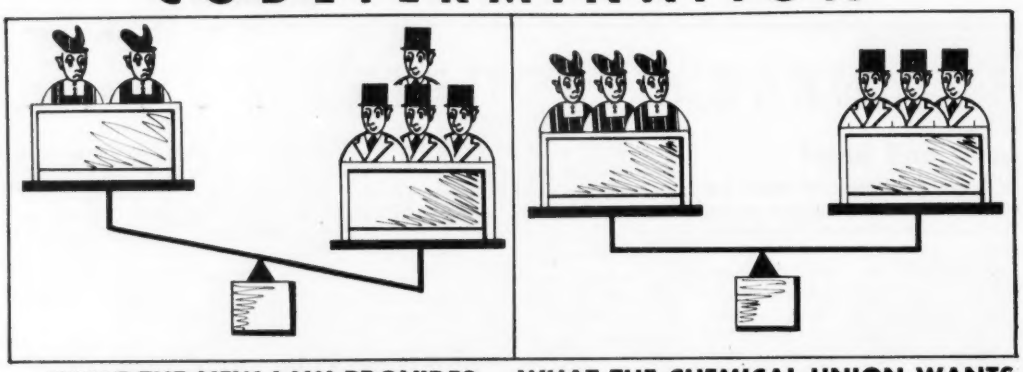
The program has included three phases: topically applying fluorides to children's teeth, recommending the fluoridation of public water supplies to a 1 ppm level, and studying how to reduce fluoride concentration in natural waters where the concentration is well above the recommended level.

Dr. Thomas Hagan, newly appointed director of USPHS's division of dental public health, feels that the facets complement each other. The fact that no more serious ailment than the mottling of tooth enamel has been found where natural water contains 8 to 10 ppm of fluoride seems at least partial proof that there is an adequate safety factor in fluoridating water.

The two methods of applying fluorides, too, complement each other. Each may be used in places where the other can't or won't be used.

The Road Ahead: At present, by USPHS reckoning, more than 350 community water systems serving over 4 million people add fluorides to their water. An additional 3 million drink water which is naturally adequate in the trace element.

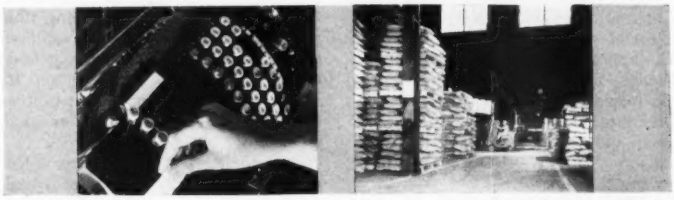
The agency thus sees a challenging public health opportunity ahead. But because of the opposition to fluoridation in some quarters, it is a job which will take a good deal of diplomatic as well as scientific skill.



WORKERS ON BOARDS OF DIRECTORS: Law says 33⅓%, labor demands 50% voice.

Reich Chemicals' New Component

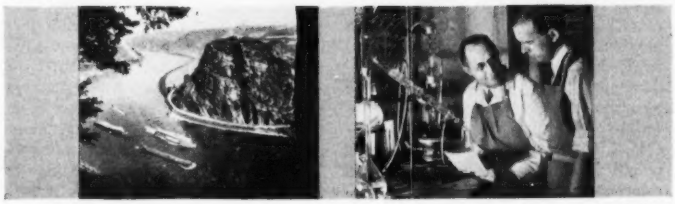
Production Methods *Company Finances*



Company Sales *Production Goals*

ECONOMIC COMMITTEE: Fifty-fifty membership studies company standing.

Wages *Hours*



Vacations *Training*

WORKERS' COUNCIL: Helps "codetermine" working conditions.

It's almost sure to come in West Germany's chemical industry, and some union leaders in the United States would like to see it adopted here. Its name is "codetermination," and what it means is that your workers help to manage your business.

The bill aimed at spreading codetermination in West Germany (it's already in effect in coal, iron and steel plants) now has passed the lower house of the Bonn parliament, and observers expect it will be ratified by the upper house and signed by Chancellor Konrad Adenauer before winter.

'Order Overalls Now': Business spokesmen in America are fervently opposed to codetermination in principle, and are fearful at the thought that it might be imported across the Atlantic to this country. Asserting that codetermination has similarities to fascism, the economic research director of the Chamber of Commerce of the United States warns that business executives "may as well order their overalls right now" unless they begin fighting "powerful forces aimed at destroying our competitive economy."

This plan, according to Researcher Emerson P. Schmidt, would lead to permanent price control and regulation of production, investment, plant location and technological changes.

Unions Not Satisfied: Actually, West Germany's labor unions are not satisfied with the codetermination bill pending before the Bundesrat. In fact, they're so burned up because this bill doesn't give them all the concessions they want that they're ganging up to defeat Adenauer and his government in next year's general election.

As a way to placate the union leaders, Adenauer and his advisers are

thinking about a scheme for an "economic council" composed of business and labor representatives, which would help shape laws dealing with the country's economy.

What the unions want is equality with company owners in management. Also, the unions want to be allowed to appoint specially trained union members to company boards of directors, rather than having the union representatives chosen from among each company's own plant force.

Three-way Command: In its present form, Germany's codetermination bill would set up three command posts in each company:

- Board of directors, with two representatives of the stockholders for every labor representative. This is the No. 1 beef for the unions: they want 50-50 representation on these boards.
- Economic committee, with not more than eight members, evenly apportioned between labor and management, in each plant employing 100 or more workers. This committee would study production, financial and sales problems and make recommendations to the board of directors.
- Workers' council, made up entirely of labor representatives, and having power to "codetermine" with management many matters such as wages, hours and plant discipline.

One Big Union: West Germany's 458,000 chemical workers, including laboratory and clerical employees, are organized into one big union, I. G. Chemie, Papier und Keramik (Industrial Union in Chemistry, Paper and Ceramics). Chief of this union is Wilhelm Gefeller, who maintains headquarters in Hanover.

This chemical union is affiliated with Deutsche Gewerkschaftsbund (Association of German Trade Unions), whose main office is in Duesseldorf and whose head man is Christian Fette.

'Economic Serfs': Labor union views on the present codetermination bill are summed up by Fette like this:

"The proposed codetermination law proves that the true codetermination of workers in industry is to be prevented. The law confirms the old privileges of management and it leaves the workers in their old role of economic serfs. This draft must not become law. This is not a question of a union drive for power; it is a question of a just settlement, of the survival of democracy, of the stability of the economy, of safeguarding the workers' jobs, and of the welfare of the whole nation."

'Gigantic Spider Web': As might be justifiably expected, Germany's management is resisting the unions' drive for equal powers in corporate management. One of the most eloquent cannonades directed at the unions' program is this statement by Dr. Walter Raymond, chairman of the Federal Union of German Employers Associations:

RAYMOND: Beware of fuehrers.

"The Gewerkschaftsbund today demands that it be granted the right of selecting its own officials to serve on our boards of directors. The unions also ask for a 'labor director' to serve on our executive committees. This labor director . . . will then attempt to interfere in all other questions of policy. This will mean the creation of thousands of new jobs. This apparatus (of codetermination boards) will cost many millions.

"It will cover all of industry like one gigantic spider web and will strangle all initiative on management's part. It will create a new corps of 'Fuehrers' that will strive to make the power of unions stabilized and uncontested. And then we will all be in the same position where we were before—and where East Germany finds itself today."

GEFELLER: One big union.

Status Quo in Steel: So far codetermination hasn't brought any significant changes in the coal, steel and iron industries, where it has been in effect for more than eight months. Plant managers have kept their jobs, and instead of asking for wage increases, the labor representatives have consented to orthodox financial policies such as investing profits in modernization of equipment.

Several explanations have been suggested for this restraint on the part of the directors from the labor unions:

- Unions are trying to win public favor and confidence, don't want to seem radical.
- Labor directors are handicapped by not having the administrative experience of the capitalist directors.
- As these new directors work with capitalist directors and become concerned with management problems, they lose their "working class ideas."

This latter factor is one that worries labor union theorists. Says one Socialist Party leader, "Whether codetermination works as we want it to depends on the character and integrity of our directors." He hopes they won't be "corrupted" by their associates.

Yankee Reaction: Philip Murray, president of the CIO, has been a sturdy advocate of some form of labor-management collaboration in deciding wages and working conditions.

But officers and owners of American chemical companies will be heartened to know that other Yankee labor leaders are opposed to codetermination. H. A. Bradley, president of the AFL Chemical Workers Union, says he doesn't believe in sharing a responsibility that properly belongs to capital.

"Management and labor each have their own functions and their own viewpoints, and management and labor must be separate to serve their own people as they should," he avers.

Tangling of Terms: Whether codetermination is a step toward "democratization of industry" (as the unions say) or "socialization" (as the capitalists say), it will be accorded keen attention by America's chemical men.

German chemical plants have sprung into a competitive position since World War II. Now comes a development that will basically alter that industry—and which might ultimately set a pattern for chemical concerns over there. After all, AFL chief Gompers started in Germany, too.

Atomic Scurry

Briskly but without shoving, hundreds of sourdoughs and tenderfeet this week scurried to stake claims on bush-and-tree-covered wilderness land in the first "uranium rush" in history.

Site of this atomic claim-staking is a 30-by-20-mile tract near Canada's Lake Athabaska, a glacier-dredged inland sea in upper Saskatchewan, about 750 miles north of Billings, Mont. Thirty large mining syndicates got three-year concessions in 1949. Each company had to spend at least $50,000 on development, now gets to keep 10% of its claim. The rest of the land now is open for public staking.

A thousand or more claims will be filed by prospectors for uranium-bearing pegmatite, but there'll be just one customer for the ore. The Canadian government has sole purchase rights on all fissionable material mined in the country.

EXPANSION . . . .

Sulfuric Acid: Consolidated Chemical Industries is completing arrangements with Humble Oil for construction of an acid unit to produce sulfuric from the spent acid of Humble's Baytown refinery. The tentative plan calls for spending $6 million on a plant which would produce approximately 600 short tons of acid (100% basis) per day. The plant is scheduled to go onstream by the end of 1953.

CCI now is building a similar, $3.5 million 500 ton/day plant at Baton Rouge, adjoining the refinery of Humble's corporate sister, Esso Standard Oil. This is expected onstream by the end of 1952.

• Bunker Hill & Sullivan, which has been considering erection of a 300 ton/day sulfuric plant at its Kellogg, Idaho, smelter (*CW, Feb. 23*), has decided to undertake the project, and revamp the present roasting plant as well. Leonard Construction has been awarded the contract.

The unit is scheduled to be completed by late in 1953, but full acid production would not be realized before early 1954. The acid would probably be sold to superphosphate producers.

•

Phosphate, Nitrate Fertilizers: Phillips Chemical will construct a 405 ton/day triple superphosphate plant at Adams Terminal near Houston, Tex. The plant will be Phillips' fourth plant at the terminal.

Phosphate rock will be shipped to Houston from Florida, and the necessary sulfuric will be produced by Phillips from sulfur recovered from hydrogen sulfide by-product from company gas fields.

• Phillips, incidentally, has set the completion of its ammonium sulfate expansion for the end of 1953, about simultaneous with the initial operation of its a-building ammonia plant at the terminal This facility will supply the added ammonia requirements, while sulfuric will be supplied from its by-product sulfur production. Daily capacity will be increased from 760 to 1,000 tons/day.

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Rare Earths: Lindsay Chemical (nee Lindsay Light & Chemical) of Chicago has received approval by the Chicago Industrial Dispersion Committee of its rare earth production expansion plans.

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Alcohol from Wood-Waste: Weyerhaeuser Timber has allowed its lease option on the government-owned ethanol-from-wood-waste plant (*CW, June 21*) to expire. The company felt that commercial possibilities did not warrant the necessary investment. Weyerhaeuser would have subleased from Oregon Wood Chemical, which has had the opportunity to operate the plant for the last three years at a $100/year rate. According to the company's agreement, however, rental rate for the next two years ending in September, 1954, would be $5,000 per month. Whether Oregon Wood Chemical will attempt to operate the plant now is still up in the air.

LEGAL . . . . . .

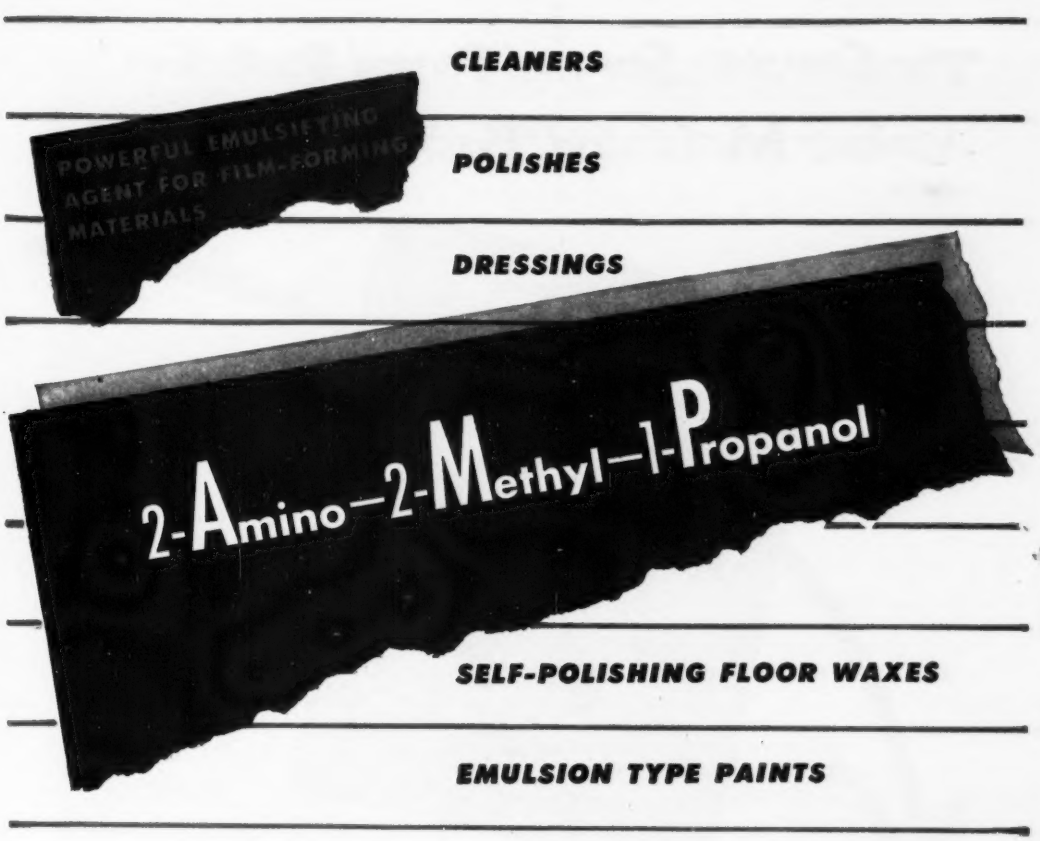
Carbide Faces Suit: Alleging that the company didn't take proper safety precautions at a gas pipe valve box at the Carbide & Carbon Chemicals plant near Charleston, W. Va., a father is suing Union Carbide & Carbon for $38,500 because his two sons were burned in an explosion there last October. The plaintiff says the company should have warned children not to play near the box, should have secured the top of the box, and should have replaced defective equipment.

•

Texas Levy May Rise: Employers in Texas are facing the prospect of paying $80 million instead of the present $20 million in unemployment insurance taxes, following a court decision that toppled the present state unemployment tax law. The Texas Employment Commission says the federal government now may levy the full 3% rate. Companies that have been paying the invalidated state tax may apply for refunds.

CURRENT LIST OF DPA-CERTIFIED FACILITIES

Company, Location	Product	Amount Certified	% Certified
National Cylinder Gas, Barberton, Ohio	Hydrogen	$ 194,971	55
Burdett Oxygen of Cleveland, at Youngstown, Ohio	Oxygen, argon nitrogen	496,550	50
Air Reduction, Milwaukee, Wis.	Argon	26,352	60
Air Reduction, Los Angeles, Calif.	Argon	23,754	60
Air Reduction, Emeryville, Calif.	Argon	79,064	60
Air Reduction, Vernon, Calif.	Argon	79,064	60
Air Reduction, Lorain, Ohio	Argon	18,165	60
Air Reduction, Chicago, Ill.	Argon	107,410	60
Phillips Chemical, Gaines County, Tex.	Sulfur	240,000	70
Phillips Chemical, Pasadena, Tex.	Ammonium sulfate	1,468,000	45
Filtrol Corp., Vernon, Calif.	Ammonium sulfate	3,715,908	55
U. S. Steel, Clairton, Pa.	Coke, coal chemicals	159,200	85
U. S. Steel, Fairfield, Ala.	Coke, coal chemicals	5,330,000	45
U. S. Steel, Cleveland, Ohio	Coke, coal chemicals	1,700,000	45
Kemmerer Coal, Lincoln County, Wyo.	Coke, coal chemicals	159,200	85
Air Reduction, Louisville, Ky.	Acetylene	81,715	50
Air Reduction, Calvert City, Ky.	Acetylene	1,001,000	50
Dye Oxygen, Phoenix, Ariz.	Acetylene	18,000	50
Lion Oil, Scurry County, Tex.	Butane, propane	185,000	40
		72,865	65
Publicker Industries, Eddington, Pa.	Butadiene	4,309,060	60
Commercial Solvents, Sterlington, La.	Methylamines	4,337,000	45
Rohm & Haas, Philadelphia, Pa.	Methylamines	434,535	45
Pittsburgh Coke & Chemical, Neville Island, Pa.	2,4-D	165,000	45
	Acid esters	60,000	45
Columbia-Southern, Barberton, Ohio	Herbicide	3,963,000	45
Monsanto Chemical, Nitro, W. Va.	Herbicide	124,700	45
Union Carbide, Bound Brook, N. J.	Polyester resins	349,600	60
	Polystyrene resins	1,536,250	45
Union Carbide, South Charleston, W. Va.	Polyethylene	1,405,700	60
Tennessee Eastman, Kingsport, Tenn.	Cellulose esters	4,485,000	45
		1,135,426	45
Allied Chemical, location undisclosed	Nylon yarn	23,165,000	40
Du Pont, Seaford, Del.	Nylon yarn	6,453,000	40
Du Pont, Martinsville, Va.	Nylon yarn	13,764,000	40
Merck & Co., Rahway, Linden, N. J.	Cortisone	362,150	50
Merck & Co., Danville, Pa.	Cortisone	978,900	50
Upjohn, Kalamazoo, Mich.	Cortisone	3,655,902	50
Monsanto Chemical, St. Louis, Mo.	Cortisone	18,415,000	50
E. R. Squibb, New Brunswick, N. J.	Antibiotics	3,442,531	60
Parke, Davis, Detroit, Mich.	Penicillin	18,451,800	55
Eli Lilly, Indianapolis, Ind.	Penicillin, streptomycin	1,425,800	55
Lindsay Chemical, West Chicago, Ill.	Cerium oxalate	12,753	85
Hercules Powder, Hattiesburg, Miss.	Rosin Amine D	532,750	45
Halocarbon Products, North Bergen, N. J.	Halocarbon oils	41,700	60
Owens-Corning Fiberglas, Anderson, S. C.	Fiberglas	3,836,700	55
Owens-Corning Fiberglas, Santa Clara, Calif.	Fiberglas	1,119,500	65



PROPERTIES OF PURE MATERIAL

Molecular Weight	89.14
Melting Point, °C	30 to 31
Boiling Point, °C	165 at 760mm
Specific Gravity	0.934 at 20/20°C
pH at 20°C of 0.1M Solution	11.3
Vapor Pressure at 20°C	approx. 1mm
Flash Point (Tag. open cup)	159°F
Solubility in Water g/100 ml at 20°C	completely miscible
Index of Refraction at 20°C	1.449

AMP IS AN OUTSTANDING emulsifying agent for film-forming materials and imparts excellent water resistance to the film.

The higher fatty acid soaps of AMP possess extremely high emulsifying efficiency and are stable in color. AMP's moderately high boiling point (165°C) minimizes evaporation loss and objectionable fumes during manufacture of emulsions—without detracting from desirable water resistance and durability of the film.

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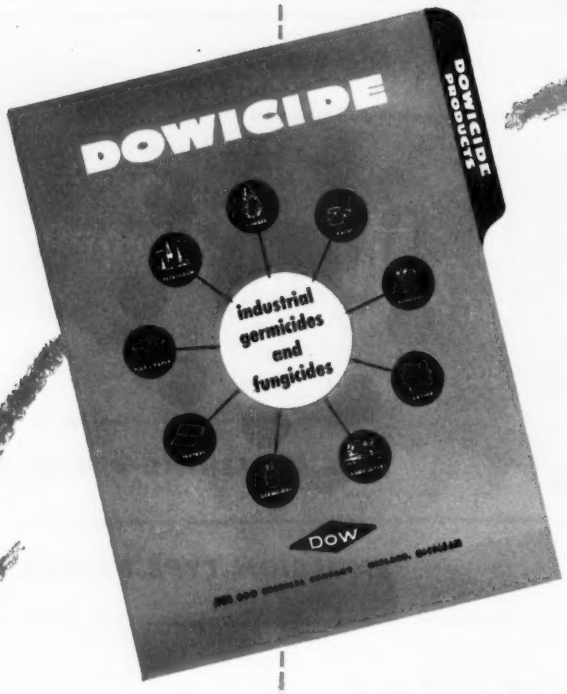

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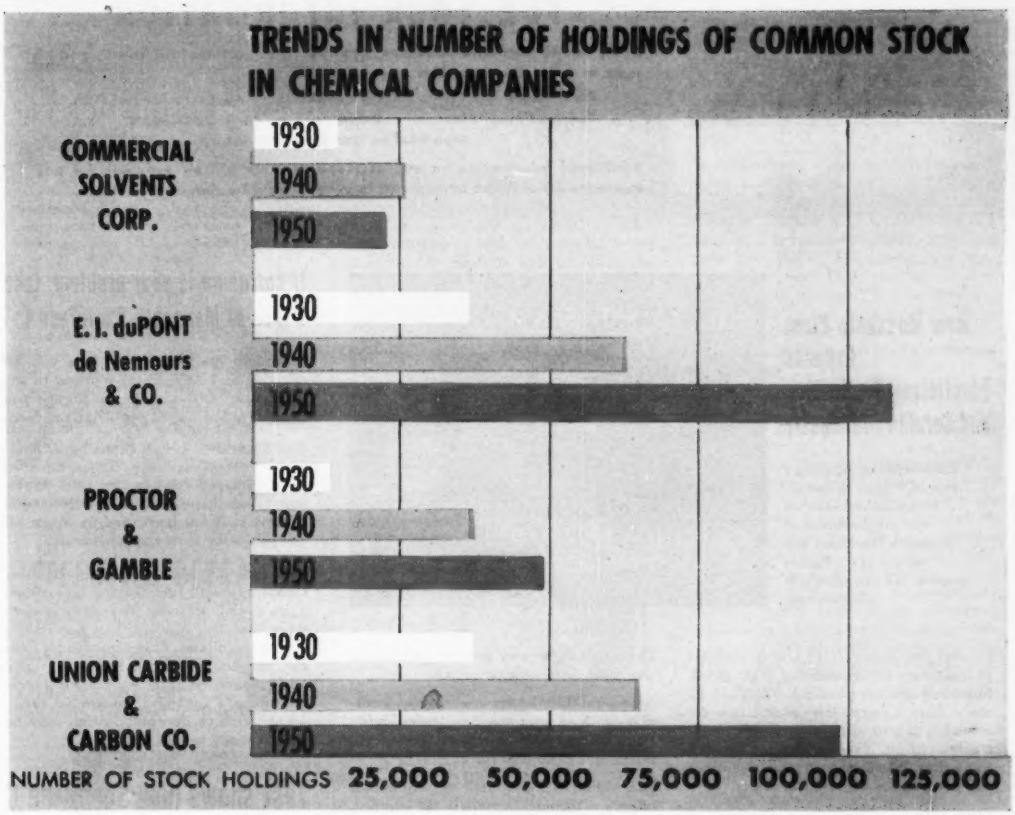


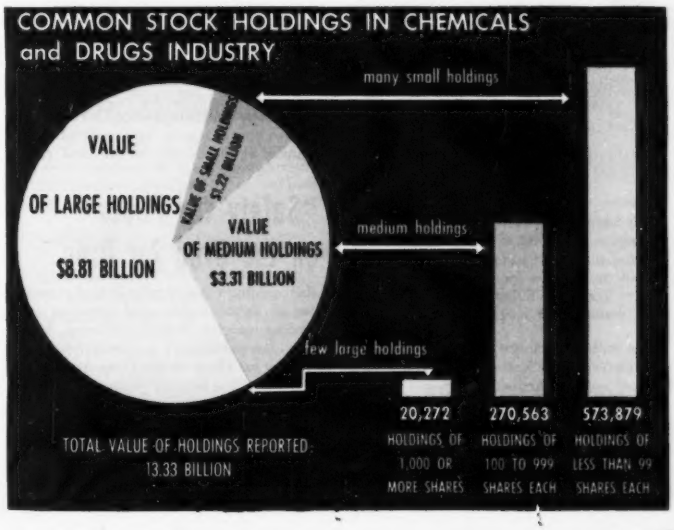
Ownership Base Broadening

People who own the bulk of stock in American chemical companies don't have to shine their own shoes—they're worth around half a million dollars apiece, on the average.

However, ownership of chemical stock is spreading out among the less plutocratic people of the country at a much faster rate than that for other industries, according to "Share Ownership in the United States," the report of a study on security holdings published this month by the Brookings Institution of Washington, D. C.

Furthermore, the big holdings of chemical stock are not concentrated in a very few wampum-saturated families, as the left-wingers frequently allege. Although the survey took in only about one-fifth of the chemical companies in the United States, it found that the owners of large shareholdings numbered more than 20,000.

Top Average Holdings: Stock issues of nearly 3,000 companies—including


COMMON STOCK HOLDINGS IN CHEMICALS and DRUGS INDUSTRY
many small holdings
VALUE OF SMALL HOLDINGS $1.27 BILLION
VALUE OF LARGE HOLDINGS $8.81 BILLION
VALUE OF MEDIUM HOLDINGS $3.31 BILLION
medium holdings
few large holdings
TOTAL VALUE OF HOLDINGS REPORTED 13.33 BILLION
20,272
HOLDINGS OF 1,000 OR MORE SHARES
270,563
HOLDINGS OF 100 TO 999 SHARES EACH
573,879
HOLDINGS OF LESS THAN 99 SHARES EACH

MONSANTO
CHEMICALS — PLASTICS

FOR YOUR INFORMATION

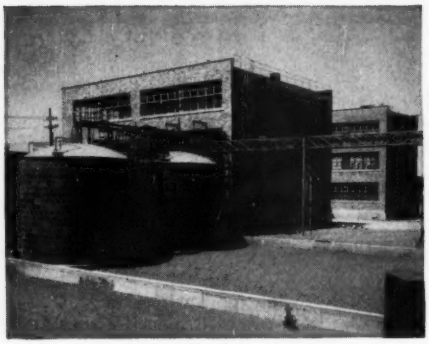
Every month Monsanto publishes these pages of pertinent information which may be helpful to you. This issue discusses:

Plasticizers **Oil Additives** **Corrosion Inhibitor**
Sodium Phosphates **Defoamer** **AROCLORS**
Crop Dusting and Spraying Safety

Additional information on any of these subjects will be provided by any Monsanto Sales Office in response to your request by coupon or letter.

New Monsanto Plant Expands Plasticizer Production and Service to Industry

Construction of Monsanto's new DOP plant at Everett, Massachusetts, expands both the production of Monsanto Plasticizers and service to the Plastics Industry. The new plant is in operation now.



Dioctyl phthalate (DOP) and di-iso octyl phthalate are being produced at the plant. Shipment of other plasticizers also can be made from Everett. The plasticizers are available in tank cars, compartment tank trucks or drums. This permits you to order Monsanto Plasticizers in the quantities you need and at economical prices.

Monsanto is a basic manufacturer of DOP. Monsanto's family of plasticizers is the most versatile in the world. This permits you to make selections of the right plasticizer, or combination of plasticizers, needed to give your product the special qualities you want. It enables you to plan your formulations for either price or quality competition and get the plasticizers you need from a single source.

Monsanto Plasticizers are readily available, with prompt shipment being made from Everett; Akron, Ohio; New York, N. Y.; or St. Louis, Mo.

In addition to prompt delivery, Monsanto offers you technical service in the selection of plasticizers to do the job your production requires. This technical service is yours for the asking.

For information on Monsanto Plasticizers and for details on the technical service, contact the nearest Monsanto Sales Office or mail the coupon.

Send for new bulletin on formulating adhesives

The formulation of heat-sealing and heat-sensitive adhesives is a feature of a new technical bulletin just issued by Monsanto. Mail the coupon for your copy of Monsanto Technical Bulletin No. O-81, featuring Santicizer *3.

The bulletin includes typical formulations of nitro cellulose heat-sealing coatings and paper coating lacquers, polyvinyl acetate adhesives, zein metallic decorative paper coatings, back-coatings for pressure-sensitive tapes and hot melts for paper adhesives. Santicizer 3, in addition to its use in adhesives, has a number of other applications.

Your copy of Bulletin No. O-81 will be sent to you promptly upon receipt of the coupon at the bottom of the next page.

"Safety for Pilots on the Crop Air Drop"

Recognizing the importance and growing use of light airplanes in spraying and dusting insecticides and herbicides, Monsanto has published a pocket-size booklet, "Safety for Pilots on the Crop Air Drop." Monsanto is a leading producer of insecticidal and herbicidal chemicals. The booklet gives details on the properties and need for safety in handling various chemicals for controlling weeds and insects. Your copy will be sent, *free*, if you will mail the coupon.

If corrosion is your problem, take a look at Monsanto Santolene C

Monsanto Santolene* C offers you an effective and economical solution to the problem of corrosion in the storage and transportation of light petroleum products.

The illustration below shows how Santolene C stops corrosion. In addition to convincing proof in extensive tests, Santolene C has demonstrated its effectiveness in service. It has been used by major oil companies for more than two years.

Santolene C is product-soluble. It burns completely with fuel, leaving no residue. Tests in both gasoline and diesel engines show that the additive does not reduce engine cleanliness, causes no injector fouling, and has no adverse effect on engine performance. Mail the coupon for a copy of Monsanto Technical Bulletin No. O-62, which contains information that may be worth money to you.

Test shows how Santolene C stops corrosion

SANTOLENE C PROVED its effectiveness in this test. Metal strips illustrated were immersed in gasoline containing various amounts of Santolene C. **1.** Control, containing no Santolene C. **2.** Strip from sample containing Santolene C at the rate of 3 pounds per 1,000 barrels. **3.** Strip from sample containing Santolene C at the rate of 5 pounds per 1,000 barrels. **4.** Strip from sample containing Santolene C at the rate of 7½ pounds per 1,000 barrels. If you want to make a similar test with your own products, we will be glad to supply a sample of Santolene C.

Santolube solves "Stop-Go" problem

Parts from engine of "stop-and-go" driver using a good premium lubricant.

Parts from "stop-and-go" driver's engine lubricated with oil improved by Santolube.*

Of every 100 miles traveled by the average passenger car, 70 to 85 miles are "stop-and-go" driving. Such operation forms organic acids that cause high engine wear . . . water condensation that brings rust . . . partially oxidized fuel and other contaminants that built up engine deposits and cause excessive wear and oil consumption. This problem of the "stop-and-go" driver can be solved by improving lubricants with Monsanto Santolubes with these special properties. Mail the coupon for details.

EFFECTIVE DEFOAMER

If you have a problem of holding down foam, why not try Monsanto Sterox * 110? Sterox 110 is a high-molecular-weight alcohol ester with excellent defoaming action. Mail the coupon for a copy of Monsanto Technical Bulletin No. P-140.

Sodium phosphates efficient helpers in many industries

Many an American industry has found its processes easier and more efficient because of Monsanto Sodium Tripolyphosphate or Monsanto Tetrasodium Pyrophosphate.

These two important members of the polyphosphate family are used as detergent aids for synthetic detergents, in dishwashing compounds, in bottle washing, in dairy cleaning, in metal cleaning, in paper deinking and as a soap builder.

Sodium tripolyphosphate (STP) is one of the newest sodium phosphates. It has excellent calcium sequestering power, outstanding detergency, high solubility in water and superb physical and chemical stability.

The sequestering action and water softening power of STP are important in the control of hard water. When soap is used in cleaning operations, STP prevents the formation of insoluble scum and curds. Such insoluble curds impair quality in numerous industries, particularly in the manufacture of textiles.

High detergency is a valuable quality of STP. When combined with other alkalies, synthetic detergents or soap, STP adds substantially to the compound's cleaning power.

Tetrasodium pyrophosphate (TSPP) combines properties as a water softener, emulsifier, dispersing agent and deflocculating agent. It is a builder for soaps and synthetic detergents. TSPP is characterized by unexcelled purity and chemical and physical stability. The synergistic action of TSPP makes it one of the most valuable of Monsanto Polyphosphates.

For information on Monsanto Sodium Phosphates, contact the nearest Monsanto Sales Office or mail the coupon.

AROCLORS improve maintenance paints . . . other applications

Monsanto AROCLORS (chlorinated biphenyl and chlorinated polyphenyls) improve maintenance paints, serve as plasticizer and resin extenders, perform efficiently as a heat transfer medium. Economical AROCLORS are in plentiful supply.

Some of the principal uses of AROCLORS are:

In Pliolite S-5 and Marbon 9200—Contribute fast-drying properties, provide excellent protection against acids and alkali, moisture and other common corrosive influences.

In Maintenance Paints—Metal-surface paints made with an AROCLOR * gain resistance to water, acids, alkali and other corrosive influences. The AROCLORS contribute to nonflammability, adhesion, gloss. The AROCLORS have good electrical properties. They also are used in modified and synthetic rubber coatings, lacquers, hot metal strip coatings, vinyl protective coatings, wood-sealer formulations and marine paints. Mail the coupon for literature.

How to cut plasticizer costs

Many users of plasticizers are cutting costs without reducing quality through the use of Monsanto HB-40. HB-40 (partially hydrogenated terphenyl) is a low-cost extender-type plasticizer for such products as vinyl extrusions, vinyl pastes, vinyl slush moldings, vinyl calendering . . . and as a primary plasticizer in polystyrene casting resins, polystyrene adhesives, molding polyvinyl carbazole, strip coatings for metals, floor tile compositions and asphalt base paints. Mail the coupon for complete details.

MONSANTO CHEMICAL COMPANY, 1700 South Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle, Twin Cities. In Canada, Monsanto Canada Limited, Montreal.

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CHEMICALS — PLASTICS

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SEND INFORMATION: ☐ Plasticizers. ☐ Technical Service on Plasticizers. ☐ Santolubes. ☐ Sodium Phosphates. ☐ HB-40.

SEND LITERATURE: ☐ AROCLORS for use in

.....

☐ Booklet (Safety for Pilots). ☐ Bulletin No. P-140 (Sterox 110). ☐ Bulletin No. 0-81 (Santicizer 3). ☐ Bulletin No. 0-62 (Santolene C).

SEND SAMPLE: ☐ Santolene C₁

MONSANTO CHEMICAL COMPANY
1700 South Second Street, St. Louis 4, Missouri

Please send, without cost or obligation, information, sample or literature as indicated at left.

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Company.....

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City.....Zone.....State.....

for men concerned with **COLOR**

Pigment Costs Reduced 60% by Maker of Leather Finishes

A pure Indian Red was causing trouble for a company making leather finishes.

The company came to us stating that it was obtaining a wide range of color effects.

Our analysis of this company's formula revealed that the pigment was uniform . . . but it was too highly concentrated in relation to the amount of vehicle being used. As a result, there was insufficient vehicle in the final film to completely coat the pigment and fill the voids between the pigment particles. This gave an optical effect of darkening.

To cure this situation, we developed a new formula which called for a 60% reduction in the amount of Indian Red. Enough pigment still remained to give complete hiding . . . and the drastic reduction enabled the company to obtain the uniformity of color it was seeking.

LET WILLIAMS PUT THE MICROSCOPE ON YOUR COLOR PROBLEM

Whatever your color problem, bring it to us . . . chances are we'll save you time and money on proper color formulation.

For complete technical reports, address Dept. 20, C. K. Williams & Co., Easton, Pa.

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COLORS & PIGMENTS

C. K. WILLIAMS & CO.
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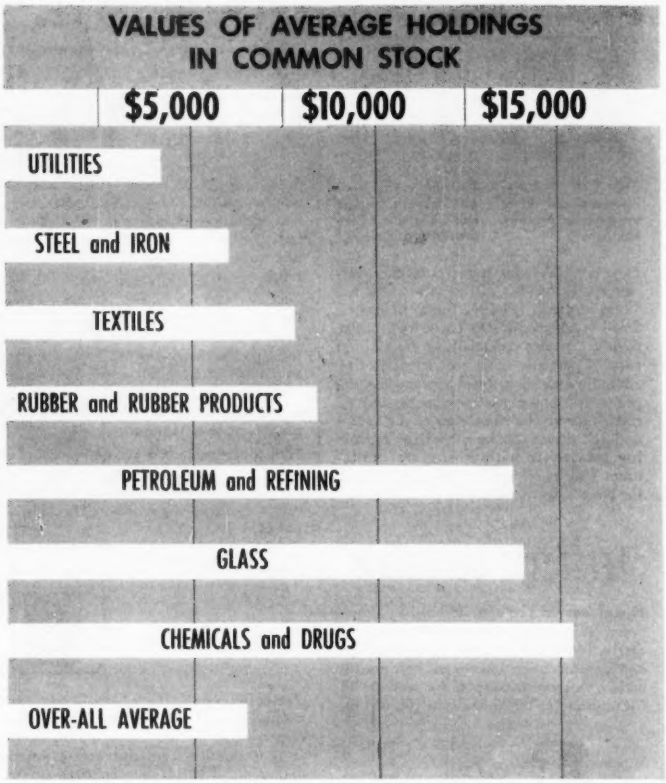
108 METALLIC OXIDE PIGMENTS FOR COLORS . . . CATALYSTS . . . POLISHING AGENTS . . . MAGNETIC MATERIALS



105 chemical corporations—are analyzed in this 140-page book in an attempt to show, statistically, what kind of people own the nation's businesses.

One of the findings is that the average holding of common stock in chemical and drug concerns is worth $15,418—higher than the average for any other industry. In preferred stock, chemical holdings average $9,870 each, ranking second to the $10,285 average worth of holdings of stock in beverage firms.

All in all, the Brookings researchers — aided and abetted by all major stock exchanges and the companies that returned their questionnaires — have found that there are 6,490,000 individuals in the U.S. who own shares in publicly held stock. Ownership of the nearly five billion shares accounted for runs like this: by men, 36%; by women, 27%; by joint accounts, 7½%; by fiduciaries or trusts, 11%; and by others, 18%.

Big Holdings Dominate: As pictured in the combination circle-and-bar graph on page 17, it's the large holdings that account for the major portion of stock ownership in this industry. Ownership of the 101 common stock issues analyzed is made up of:

- 20,272 large holdings (1,000 or more shares each), accounting for a total of 138,035,000 shares worth $8,806,697,000—which was 66.1% of the total value of the 101 issues.
- 270,563 medium-sized holdings (100 to 999 shares each), accounting for 58,899,000 shares worth $3,310,256,000. This was 24.8% of the total market value.
- 573,879 small holdings (1 to 99 shares each), accounting for 20,362,000 shares worth $1,215,115,000. This was 9.1% of the total value.

In preferred stocks, the humble investors have a somewhat larger share of the total holdings. Large holdings comprised 51.8%, medium holdings 26.5%, and small holdings 21.6% of the $824,450,000 aggregate.

Lucre-Laden Owners: Those large holdings of common stock average $436,000 apiece. Assuming that those owners also are blessed with a few other holdings (possibly chemical preferred stocks and bonds), plus a tidy little bank account, plus personal property and a dab of real estate, it appears that these persons are worth in the

We're Basic every step of the way!

When we say we're basic from coal to plasticizers, we *mean* basic! For we're able to control every step of our production from the time our coal is mined until we actually ship the finished plasticizer to your plant.

What's more, our completely integrated plant is strategically located at Neville Island, on the headwaters of the Ohio River near Pittsburgh, Pa., where coal and other raw materials are in plentiful supply.

What does this basic position mean to you? For one thing, it means you can count on Pittsburgh Coke & Chemical for dependable supplies.

Then too, the uniformly high quality that results from our close, step-to-step control of every phase of plasticizer production assures you consistent peak plasticizer performance and improved characteristics in your finished plastic products. That's why it pays, *in every way,* to buy plasticizers from a basic producer.

Get your FREE copy of this new book!

Contains valuable data on the plastics industry, the role of plasticizers in the industry, and descriptions and recommended applications of Pittsburgh PX Plasticizers. *Write for your copy today!*

WBD 4206

PLASTICIZER DIVISION

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You gain guaranteed accuracy with equipment like the new Triangle *Elec-Tri-Pak* Net Weigher and Filler. Triangle offers a total of 77 ways to save time, money, labor . . . reduce overfill losses, eliminate underfill troubles and *increase your profits.*

Triangle Helps

Yes, Packaging can be easier and more profitable with the help Triangle engineers and equipment give you. For suggestions . . . *return the coupon below.* No obligation.

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Please send, without obligation, suggestions for saving packaging costs.

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neighborhood of half a million each, on the average.

But the Brookings report contains another table indicating that chemical stock is being dispersed among an increasing number of persons at a much more rapid rate than is the case with stocks of other industries.

This table shows number of shareholders in the common stock of 45 large concerns over the 20-year period from 1930 to 1950. Among the non-chemical firms in this group are AT&T, General Electric, National Biscuit, Pennsylvania Railroad, Standard Oil, Westinghouse and Woolworth. For the group as a whole, total number of shareholdings increased by 71.9% in the 20 years. But for the four chemical companies listed, the increase averaged more than double that figure.

Another sign that industrial ownership is acquiring a broader base: Out of the more than 1,300,000 individual stockholders covered in this survey, about one-fifth became share owners during the past three years. No longer can a company make a sharp distinction between "our owners" and "the general public"—the two groups are slowly merging into one.

Juggling Tax Load

Chemical companies in Texas, sure that they'll get hit either coming or going, if not both, sighed wearily this week as the state prepares to appeal a court decision that knocked down the tax on gathering of natural gas.

Here's how the chemical companies are caught in the crossfire on this scrap: If the gas tax is upheld, they'll have to pay higher fuel bills; if the gas tax is junked, the state will have to make up that lost revenue by upping its tax rates on other segments of industry—and for this purpose, the chemical industry is a prime target.

Snag to Commerce: The gas tax—9¢ for every 20,000 cubic feet taken out of Texas' renowned prairie ground—is a burden on interstate commerce, and so is unconstitutional for any state to impose, the court ruled.

Price Daniel, aggressive young attorney-general who now is slated to succeed venerable Tom Connally as United States Senator from the Longhorn State, has argued that taking Texas gas out of Texas ground is an act occurring entirely within the state and hence taxable by the state. But District Judge Jack Roberts wasn't convinced.

"The incidence of the tax on the first taking of the gas is an inseparable and integral part of interstate commerce, so it is unconstitutional under the federal commerce law and under rulings of the U. S. Supreme Court," the judge opined.

State Funds Low: The Texas state treasury now is likely to run short of cash before the legislature meets next January. If the State Court of Civil Appeals in Austin backs up Judge Roberts' ruling, the state will have to cough up around $5 million as refunds for the 59 gas companies that have been paying the tax under protest since it went into effect last September.

Some of the larger gas companies, like Tennessee Gas Transmission, United Gas Pipe Line and El Paso Natural Gas, have paid the tax without protesting. The tax has been favored by independent producers and royalty owners, because the alternative to the gas gathering tax was a higher gas severance tax that would have come straight to them.

Chemical companies, which are big users of Texas natural gas, generally appear to favor the gas tax. They'll be hoping that Senator-to-be Daniel wins this case, even if he has to go to the U.S. Supreme Court—which is where the case seems to be heading.

KEY CHANGES . .

J. Murray Johnston: To manager, Titanium Alloy Manufacturing Division, National Lead Co., New York.

D. L. Yabroff: To associate director of research, Shell Development Co., Emeryville, Calif.

Louis V. Feldman: To technical director, Division Lead Co., Chicago.

R. A. Hoekelman: To assistant general manager, plastics and resins division, American Cyanamid Co., New York.

Harold A. Sweet: To director, industrial division, Refined Products Corp., Lyndhurst, N. J.

G. W. Beatty: To manager, plastic sales division, Dow Chemical Co. of Canada, Ltd.

L. K. Merrill: To vice-president in charge of product and process development, Bakelite Co., New York.

J. M. Selden: To manager, eastern division, Shell Chemical Corp., New York.

Boyce C. Bond: To sales supervisor, Pittsburgh Coke and Chemical Co.'s Fine Chemicals Division, Villanova, Pa.

Robert W. Towne: To technical personnel superintendent, The Chemstrand Corp., Decatur, Ala.

"Take a letter to the J. T. Baker Chemical Company...

...We need TONNAGE CHEMICALS of controlled purity."

"Dear Sirs:

"We are in the market for several metallic salts where specific impurities must be held to exacting tolerances.

"Your salesman, when he last called, advised that you frequently were in a position to supply these chemicals from stock—or could make them to specification if requirements were sufficient for economic manufacture.

"We would like to make arrangements for a meeting here with our technical staff—to go over our needs, arrange for pilot run quantities, and determine prices and schedule of deliveries on a tonnage basis.

"Please phone when your company representative can see us."

This letter is typical. Wherever there is a need for tonnage chemicals to exacting standards, purchasing managers know it pays to "ask the Baker salesman."

Baker is particularly qualified to serve your needs. Today, with newly expanded production facilities—with a half century of experience and "know-how," the J. T. Baker Chemical Co. is headquarters for tonnage chemicals of high purity.

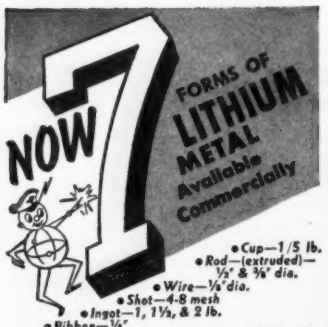
When chemical problems arise, rely on Baker. Write, phone, or ask the Baker salesman when he comes in. We'll try and help.

J. T. Baker Chemical Co.
Executive Offices and Plant, Phillipsburg, N. J.

Baker CHEMICAL

Baker Chemicals

REAGENT • FINE • INDUSTRIAL



- Cup—1/5 lb.
- Rod—(extruded)—½" & ⅜" dia.
- Wire—⅛" dia.
- Shot—4-8 mesh
- Ingot—1, 1½, & 2 lb.
- Ribbon—¼"
- Cartridge (encased in copper tubing)—2.25, 4.50, 9.0 & 108.0 grams per cartridge

Plus...

- Lithium Hydride—Fine Ground
- Lithium Nitride—Lump
- Lithium Amide—Crystalline

A recent expansion program has enabled Metalloy to substantially increase the production of Lithium Metal. Only Metalloy makes Lithium Metal available in so many forms (*seven*) to neatly fit practically any production process.

We are currently producing Lithium Nitride only in experimental quantities on demand. We are prepared, however, to explore its commercial possibilities for those who think it might fit into their operations.

14 LITHIUM SALTS

(Currently in short supply but being expanded:)
Aluminate—Borate—Bromide—Carbonate—Chloride—Cobaltite—Fluoride—Hydroxide—Manganite—Nitrate—Silicate—Titanate—Zirconate—Zirconium Silicate.

If It's Lithium—It's Metalloy! *Write Dept. A for Data Sheets*

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Rand Tower
Minneapolis 2, Minnesota

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World Leader in Plastic Sealers for Chemical Plants

CHLORO-Seal

Chlorine producers save money using this famous plastic compound for sealing in and out pipe and cover joints in chlorine cell operations. CHLORO-Seal stays ELASTIC. It gives permanent protection—providing a cushion seal that won't crack or chip off due to expansions and contractions. Good for temperatures to 300 F. Try CHLORO-Seal for perfect satisfaction!

ACID-RESISTANT CEMENT

For sealing joints in lines carrying liquids or gases at HIGH temperatures, use THARCO Acid-Resistant Cement.

Let us help you with ANY special sealing problem.

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241 S. Post St., Detroit

SPECIALTIES . .

HANDY HEAT: Convenience makes million dollar potboilers.

It Started With Sterno

Quartermaster Corps. acceptance of new trioxane fuel tablet points to more competition in this $1 million-plus annual portable heat source business.

Solidified alcohols, and tablets of hexamethylenetetramine now hold bulk of civilian handy-fuel market.

But research hasn't halted; QMC is trying out di-isopropylidine glyoxal, also carbon-based pellets.

With an order for 20 million tablets of trioxane (formaldehyde trimer), the Armed Forces have launched a new contender for the handy-heat business.

Sterno Canned Heat is the most famous of these artificial fuels. It's probably still the kingpin in this specialty business that chalks up total sales estimated at well over $1 million a year, not counting military purchases.

Right now, Sterno splits the nonmilitary market with Heatabs, a relative latecomer, but it may well be in for competition from trioxane. Celanese Corp., only producer of the trimer, admits that it is eyeing the potentialities of civilian business.

These civilian sales prospects include campers, picnickers, and those who require an emergency heat and light source. A major portion of the market, at least for Sterno, is sales to people in small, kitchenless apartments, who cook regularly with nothing but "Canned Heat."

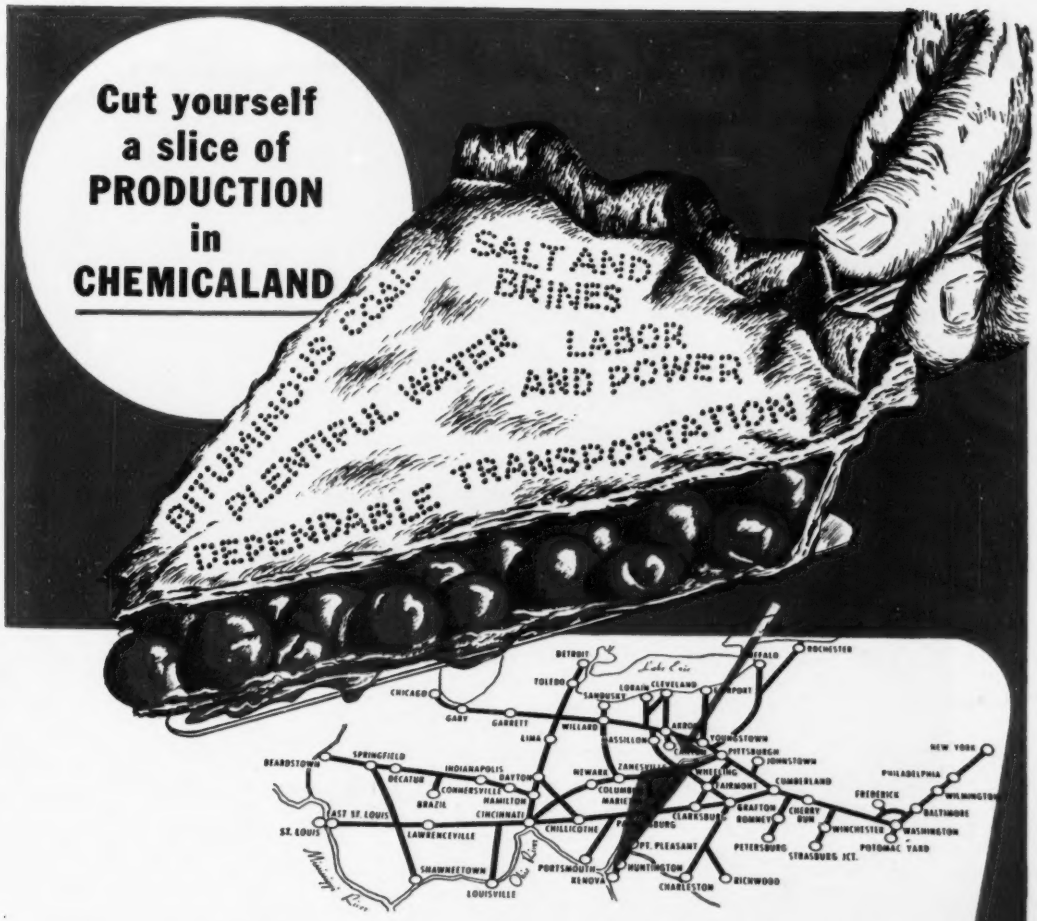
Far from Retiring: Sterno is made by Sterno, Inc.,* a 65-year-old firm that is far from retiring from the portable fuel field. Small, publicity-shy Sterno, Inc. has never published its sales figures—and doesn't intend to.

The fuel, packed in a patented container, is essentially solidified methanol. Process patents, issued shortly after the first world war, describe making the colloidal gel by combining wood alcohol with nitrated cellulose, then adding ethanol to solidify it, or combinations of ether, pyroxylin, and denatured ethanol. Since then, other secret processing changes have been made.

It was at one time used by the services to heat field rations; govern-

* Long known as the S. Sternau Co., of Brooklyn, run by Sigmund Sternau and Lional Strassburger, it has since become Sterno Inc., has its plant in Baltimore.

Cut yourself a slice of PRODUCTION in CHEMICALAND



● You're UNDERWRITING YOUR FUTURE when you join the trek to the Valley of the Ohio. In this resource-rich "American Ruhr", plant after plant *right now* is in operation with an eye to the rapidly expanding civilian markets, and high defense needs. Here the chemical industry and allied utilities and industries, in a decade has invested $750,000,000—overwhelming proof that here is found the economic atmosphere so vital to profitable production.

Benefits are many: Fast, convenient Baltimore & Ohio TRANSPORTATION to vital markets; labor aplenty—young, loyal and steady; vast reserves of BITUMINOUS COAL, NATURAL GAS, and OIL; POWER plants rated at 2 million kilowatts; SALT and BRINE deposits among America's best; a remarkable supply of ground and surface WATER; and—some good SITES.

Many a plant now is enjoying its "slice of production" on a site recommended by our Industrial Development Staff. *They can help you, too.* They'll gladly prepare a plant-location study *tailored to fit your specific needs.* No *cost!* No *talk!* Just *ask our man!*

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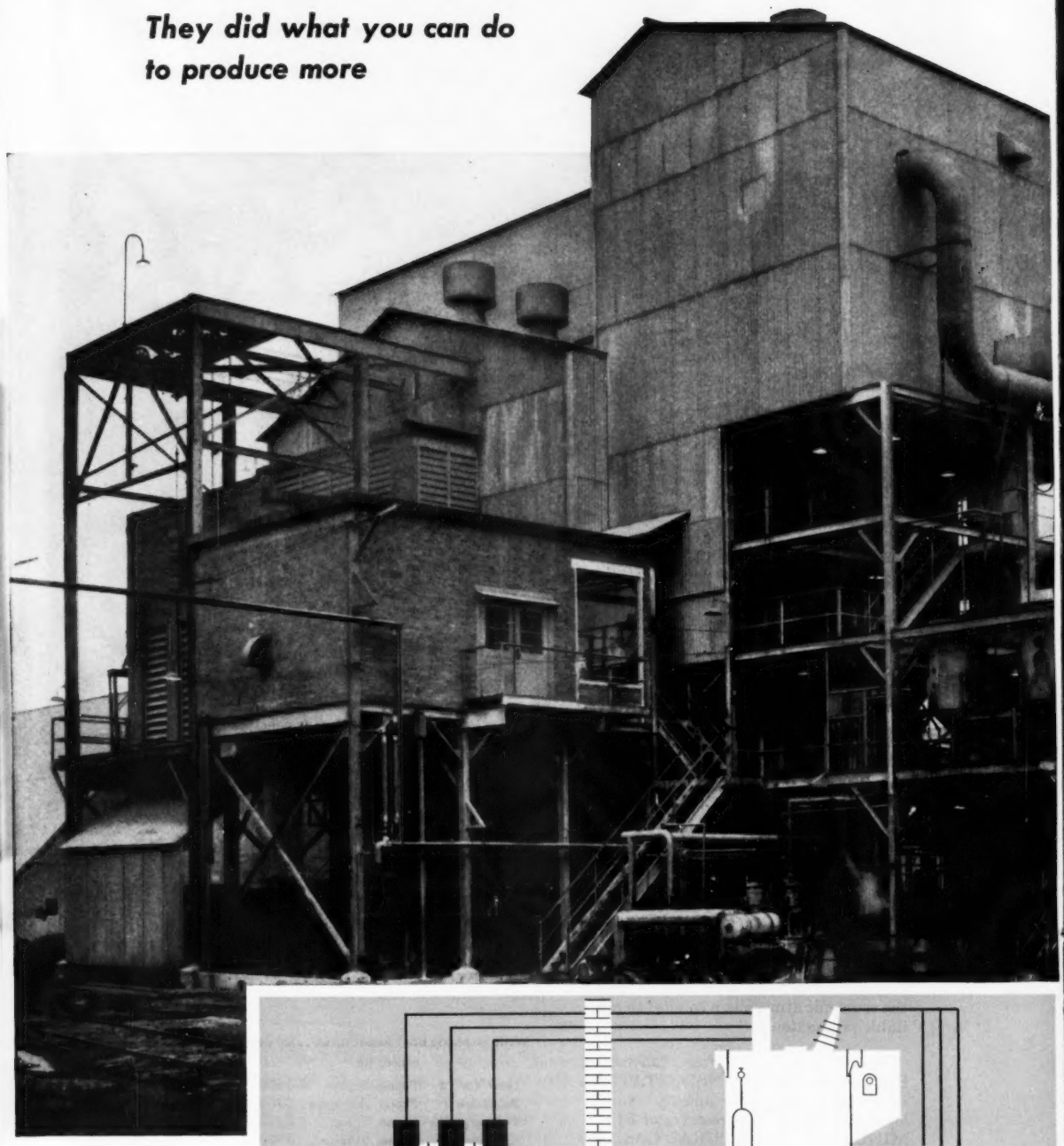
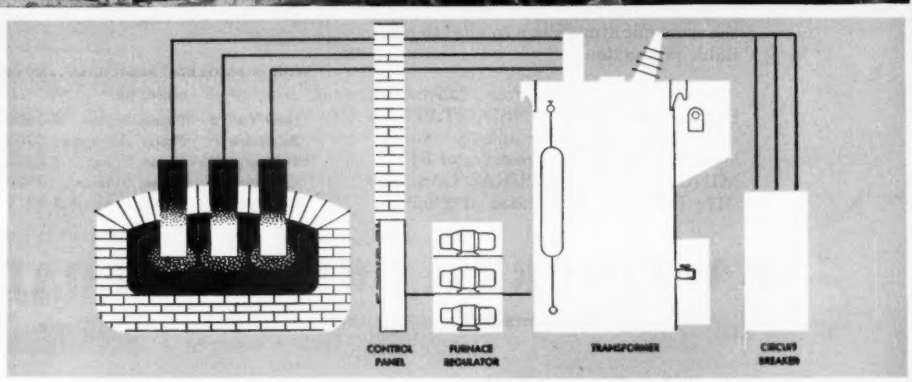
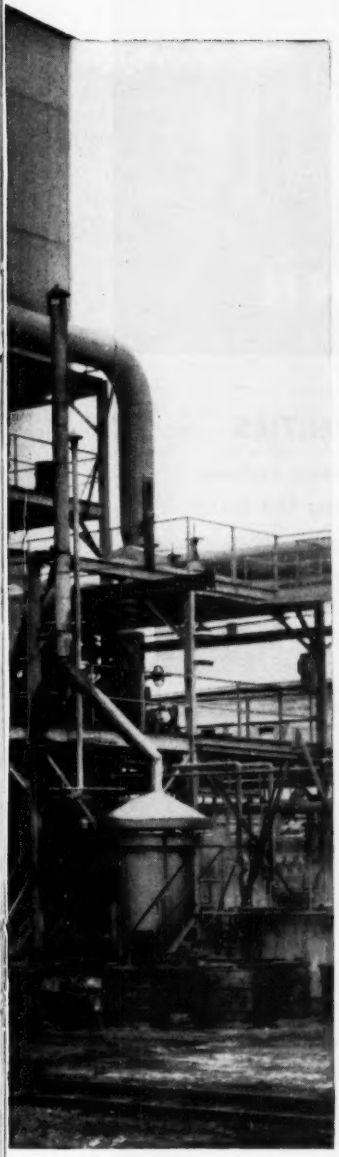
LINKING 13 GREAT STATES WITH THE NATION B&O

They did what you can do to produce more





How the right Arc Furnace Equipment keeps costs down



Here's a case where a relatively small plant is one of the industry's lowest cost producers. It's the Virginia-Carolina Chemical Corporation's new electric furnace operation at Charleston, S. C., for the production of phosphorus.

Power efficiency is 10% above normal

The biggest operating cost item is electric power (30 to 35% of total operating costs) so they planned the electrical system carefully and had Westinghouse help. First they designed for an unusually high operating voltage. This increased the efficiency 10% and also boosted furnace capacity. In effect, the high voltage lengthens the ***reaction zone*** in the furnace and thus increases production per kwhr.

Rototrol runs furnace automatically

The furnace operation is controlled automatically by Westinghouse Rototrol®. It maintains the desired operating conditions by continuously moving the carbon electrodes up and down within the boiling charge. When any electrical disturbance occurs, Rototrol smoothly restores proper conditions without overshooting.

System designed for high power factor

Smart planning also resulted in a high power factor for the unit and this further reduced power bills. The whole electrical system is highly dependable because of the experience Westinghouse brings to furnace equipment design. More Westinghouse arc furnace equipment is in use than all other makes combined.

Call Westinghouse on your next project

This project is typical of the engineering assistance and equipment Westinghouse applies to chemical processes. When your next project comes up, call Westinghouse *early* in the planning stage.

FREE BOOK ON ARC FURNACE EQUIPMENT

If you're interested in arc furnace production, write now for this free book "Westinghouse Equipment for Electric Arc Furnaces", B-4695. It tells how you can increase output, get more dependable production. Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pennsylvania. J-94886

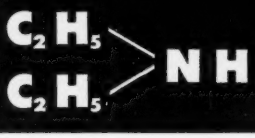
YOU CAN BE SURE...IF IT'S

Westinghouse

EQUIPMENT FOR CHEMICAL PROCESSES

DOUBLE CHECKED
FROM RESEARCH TO INDUSTRY

SHARPLES DIETHYLAMINE



APPLICATIONS

The following applications of diethylamine are taken from present practice and from the literature:

EMULSIONS—Intermediate for fatty acid soaps used as emulsifiers.

ENAMELS—Anti-livering agent.

PETROLEUM—Solvent extraction.
Synthesis of gasoline and hydrocarbon stabilizers.

PHARMACEUTICALS—Intermediates for medicinals.
Preparation of vitamin derivatives.

PLASTICS—Preparation of amides (plasticizers).

RUBBER—Synthesis of vulcanization accelerators.

TEXTILES—Synthesis of dyestuffs.
Intermediate for surface-active agents.

CHEMICAL PROPERTIES

Diethylamine is a very useful and versatile intermediate. Among the many chemicals with which it reacts are aldehydes, ketones, oxides, phosgene, carbon disulfide, chlorohydrin, cyanates and thiocyanates.

• • •

SPECIFICATIONS

Color	Water White
Specific Gravity @ 20°/20°C.	0.70-0.71
Diethylamine Content	98% (Min.)
Distillation:	
IBP	53°C. (Min.)
FBP	59.5°C. (Max.)

Write for additional information

SHARPLES TRADE MARK CHEMICALS

SHARPLES CHEMICALS INC.
A SUBSIDIARY OF THE PENNSYLVANIA SALT MANUFACTURING COMPANY
500 Fifth Ave., New York • 80 E. Jackson Blvd., Chicago • 106 S. Main St., Akron
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Shawinigan Chemicals, Ltd. • Montreal • Toronto
Airco Company International, New York

ment surplus cans of Sterno, with the olive-drab finish buffed off, have been sold under various names.

Speaker Up: Heatabs, made of hexamethylenetetramine (hexamine), have been marketed by the J. W. Speaker Co. (Milwaukee) since 1941. Speaker, an auto accessory firm, got into the business solidly after it had convinced the military of the pellet's value (Heatabs, and Sterno too, are usually sold with a small, folding stove) and Heatabs were used extensively in the last war.

Since 1946, Speaker has pushed Heatabs as a safe, compact heat source for use by campers, fishermen, hunters; also as a fuel for hotel chafing dishes and the like. Soup companies have offered the pellets and stoves as premiums; Speaker flies them into disaster-stricken areas where gas and electricity are out.

Trimer Try: At the price trioxane tablets command from the government, they're in a good position to meet civilian competition.

But civilian orders won't be in lots of 20 million, and the 5¢-plus price for a 30-gram (roughly 1-oz.) tablet will be difficult to manage in across-the-counter-sales. Pricewise, the current fuels compare like this: A small, 2½-oz. can of Sterno, said to burn about an hour, costs 13¢ (prices may vary, the product is not fair-traded) in some stores. Heatabs of 100-grain weight (45- and 500-grain pellets are also made) last about ten minutes, sell at 65¢ for 24.

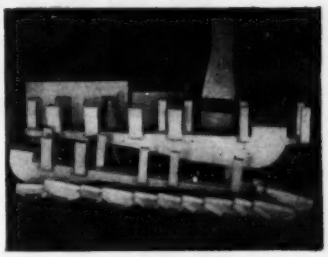
On the Way: None of these fuels is the complete answer to the demands of an army in the field. The solid alcohol is somewhat bulky, the can inconvenient. According to the QM, hexamine tablets evolve noxious fumes in close quarters, both hexamine and trioxane are water-soluble and may sublime at high temperatures.

The QMC's research and development section is still working on fuel compounds, has a couple that look good although they are not available for issue yet. One of the still experimental ones is di-iso-propylidine glyoxal. Another is a pliable block, made up of lampblack, iron compounds, inorganic oxidizers, and binders.

Ice Tubes Boost Sales

COLLOIDAL GEL "ice" to keep perishable food displays refrigerated is displayed by inventor J. C. Shepard. Called Sno-Gel, it is shown packed in polyethylene tubes, can be chilled to any temperature from 30 to −8F. Other forms of Sno-Gel are available: unprotected slabs, bagged "crushed ice," canvas-covered logs, and 3″ by 12″ Cold Dogs. Product is made by Chemical & Fibre Associates, Inc., sold by Sno-Gel Inc., Oakland, Cal.

FAMOUS AVIATION COMPANY EQUIPS NEW PLANT WITH COMPLETE EXHAUST SYSTEM RESISTANT TO CORROSIVE FUMES



PLA-TANK®

RESIN-BONDED FIBERGLAS®

Pictured above is but a portion of an order for PLA-TANK parts placed by a well-known aviation company for installation in their new plant. This picture shows the Exhaust Hoods complete with Ducts for a down draft exhaust system.

All of these parts, as well as many others not shown (including tanks for dips and plating solutions) were fabricated of PLA-TANK. PLA-TANK is a corrosion-resistant material, made of Fiberglas, impregnated and bonded with polyester resins. It is molded into strong, rigid units, light in weight but extremely durable. These units are resistant at temperatures from −60°F. to +280°F. PLA-TANK is not just a lining but equally resistant inside and out.

By combining standard stock units with custom fabricated parts a complete system may be developed for the transfer of your corrosive exhausts and fumes. And it may be used with corrosive liquids, too, as it is also fabricated in the form of tanks, tank linings, pipe and pipe fittings.

Data Sheets Sent on Request

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SPECIALTIES. . . . .

Convenience and simplicity will always help sell these handy heaters—whether to the Army or to fishermen. The field is old and established, but these fast-moving developments prove it isn't static.

Unhappy Harvest

A backwash of unfavorable reaction to some hastily concocted soil conditioners seems to have started:

• Last week the Virginia Department of Agriculture warned farmers and gardeners in that state that one of the conditioners—Loamium—does not comply with state fertilizer standards.

• CHEMICAL WEEK has learned unofficially that the Federal Trade Commission has received complaints about many of the artificial "humus replacers."

Loamium's (White House Co., Loamium division, Harrison, N. J.) trouble stems from the fact that it is advertised as a fertilizer as well as a soil conditioner. Virginia law requires any fertilizer sold in the state to be at least 18% plant food—and according to tests there, Loamium averages 5.23%. It is labeled as being 45% active fertilizer.

Because Loamium is made and distributed outside the state, Virginia law cannot touch it. But that isn't preventing the state from issuing warnings. And talk has been heard that Virginia will ask the U. S. Post office to stop the flow of Loamium across its borders.

The complaints to FTC are for the most part about the delay in receiving mail order products.

But there have been other, more significant complaints that the soil conditioners don't live up to advertised claims. And that isn't hard to believe; some of the finished consumer products (in sharp contrast to manufacturers of the basic ingredients) make almost incredible claims. Samples: "Single gallon completely remakes as much as 2,000 sq. ft. of soil.". . ."Sickly flowers grow to flower-show size, and where you had 10-20 blossoms before, now you can have hundreds."

Already the USDA has placed its "use with caution" dictum on soil conditioners. The hope now is that stronger action won't be necessary.

•

New Wax: A non-ionic emulsifying wax for cosmetic and pharmaceutical preparations, developed in England, is now being offered in this country by Croda, Inc., (New York). Polawax,

as it is termed, is based on stearyl alcohol and ethylene oxide reaction products, is a white waxlike solid.

•

New Standard: The Commodity Standards Div. of the USDA has established a Commercial Standard for Water Resistant Organic Adhesive for installing clay tile. Identified as CS-181-52, it became effective in July. Copies (TS-5083) may be secured from F. W. Reynolds, Office of Industry and Commerce, USDC, Washington 25, D.C.

•

New Resin: Uformite 711 is a new low-cost resin developed by Rohm and Haas for improving wet strength, other properties of paper products.

•

Tennessee Plant: Chemi-Dent Products, Inc., Kingsport, Tenn., is a new manufacturer of insecticides.

•

Medicant Vehicle: Chester-Kent (St. Paul, Minn.) has taken over exclusive rights for the manufacture of Croleum Vehicle, an emulsion of castor oil, distilled water, boric acid, glycerine, and surface tension dispersants used to carry medicaments.

•

Beautifier: Latest application of polyethylene bottles: Sales Affiliates, Inc. (New York) is now selling its hair tinting compound, Inecto Color-Quick, in a small polyethylene bottle with a sponge attached. Color and developer are mixed in the container, then applied directly to the hair from the sponge on the bottle cap.

•

Southern Customer: Florida farmers are proving to be good fertilizer consumers. Last year they applied some 1,205,211 tons of fertilizers.

•

Peru Tax: The Peruvian Government has recently hiked the import duty on packaged soap and detergents. In an effort to protect its home industry, the tax is now about $.24/kilo as compared with the old $.06/kilo. Monsanto Chemical, one firm that might have been affected, has recently begun local manufacture of its detergents in Peru.

•

Lighter Casts: Davis and Geck (Brooklyn, div. American Cyanamid Co.) is now introducing a new compound for casts for bone fractures. Called Melmac Orthopedic Composition, the new plastic powder can be used to form casts that are said to be lighter, thinner, and more porous (permitting evaporation of skin moisture) than plaster of Paris.

New Triumph of Science!

The transistor, employing germanium, is a significant new tool joining the vacuum tube in the teamwork of electronic devices which promise great things to come in industrial and military technology such as radar, guided missiles, computing machines, telephony, television, radio, and improved instrumentation for factory and office operations.

You will hear more about the transistor. This tiny, reliable device exemplifies the progress through applied science in which modern industry has achieved such outstanding results.

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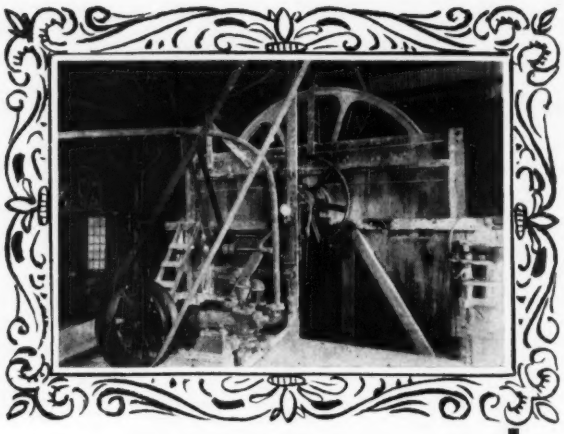
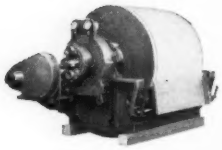
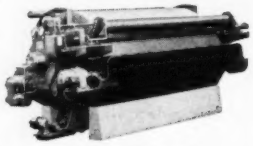


45 Years ...dating from

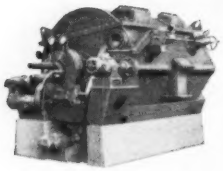
FROM THIS TO THESE



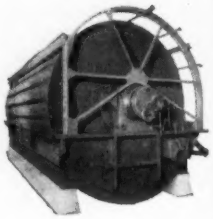
Oliver Chemical



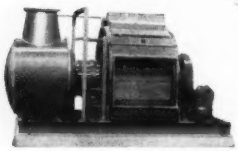
Oliver Precoat (Open)



Oliver Precoat (Vacuum)



Oliver Panel



Oliver Top-Feed

Oliver Horizontal Rotary

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Oliver-Beatty Pressure Filter
Sweetland Pressure Filter
Kelly Pressure Filter—Standard Type
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As we view it, five facets of Oliver United's service rate particularly high in value for those with filtration and clarification problems:

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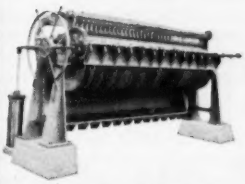
For 45 years a must with Oliver United; the department responsible for (1) improving the design and construction of existing filters and (2) bringing out new units and major variations in existing types to meet new industrial problems.

World-Wide Service

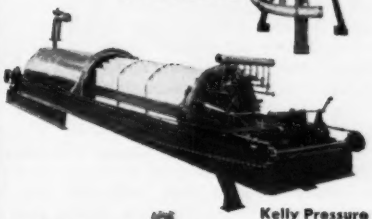
There are three sales-engineering offices and two factories in the United States. In addition there is manufacturing, sales and service throughout the world in charge of competent filtration engineers experienced with Oliver United equipment.

This, briefly, is Oliver United's service to those faced with filtration and clarification problems. Bring your filtration problems to the staff with 45 years "Know how", with offices and manufacturing facilities located all over the world.



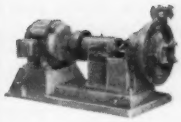
Sweetland Pressure

Oliver Pressure

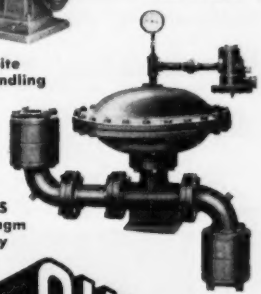


Kelly Pressure

AND DON'T FORGET OUR PUMPS



Olivite Acid-Handling



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Bigger Role for Coal

Looking ahead to 1975, The President's Materials Policy Commission surveys sources of energy.

Here's what portend for natural gas, petroleum, coal and hydro-electric power:

Rubbing once again its well-rubbed crystal ball, the President's Materials Policy Commission now looks ahead to the country's energy requirements for 1975, surveys the means for meeting them most economically.* That the subject is close to the hearts of chemical production planners is clearly evidenced by Bureau of Census figures:

Preliminary figures for 1950 indicate that the chemical industry shelled out $370 million (out of $4.1 billion by all manufacturing industry) for fuels and electric energy. And that includes neither the value of fuels used as raw materials nor value of fuels and electricity produced and consumed in the same plant. Nor does it include figures for petroleum, paper, primary non-ferrous metals and other products of chemical processing.

The Commission bases its estimates of future requirements on assumptions of population growth and increases in national output of goods and services. It further assumes that, although world tension will continue, a third war will be averted. It then sets out to answer four questions:

- Does the U.S. have the resources to meet future energy demands?
- Will the real costs for energy rise and, if so, will the rise retard economic growth?
- Can the U.S. and its allies meet the increased energy demands brought on by an all-out war?
- What are the most promising opportunities available for strengthening our long-range energy position and what will it take to develop them?

Doubling Up: By 1975, the U. S. will need roughly twice the amount of energy consumed in 1950. Providing that energy from all sources most economically is the crux of the problem. The Commission tackles it by dividing the study into four phases—petroleum, natural gas, coal and electric energy—admitting that the "interrelations are more important than the separations."

The demand for oil alone will probably double during the next quarter of a century. There is no basis for the pessimism prevalent in the '30s that petroleum reserves are fast running out. New reserves are constantly being proved and the industry is confident that under the right political and economic environment it can meet all demands for some time to come.

The consensus, however, is that at some point in the distant future, the task will become more difficult and prices will start to climb. That means that the nation will have to rely more heavily on imports and that some consumers will have to switch to coal or other fuel. It means too that liquid fuels from coal (by hydrogenation or Fischer-Tropsch synthesis) and from oil shale will have to step in to fill the gap.

Paralleling Petroleum: The outlook for natural gas closely parallels that for petroleum. If the supplies were available, use of natural gas could increase by two and a half to three times over the next quarter of a century. Like petroleum reserves, natural gas reserves cannot be established accurately; but the supplies will probably start to decline sometime before the century is out.

Some substitutions will have to take place over the next 25 years, but, in general, they will not be cause for alarm. At some time after 1975, the situation will become more serious. Costly dislocations may result in the entire economy of the Southwest, for customers will have to absorb the heavy capital costs of conversion to another material, and the extensive transportation and distribution system will be rendered useless.

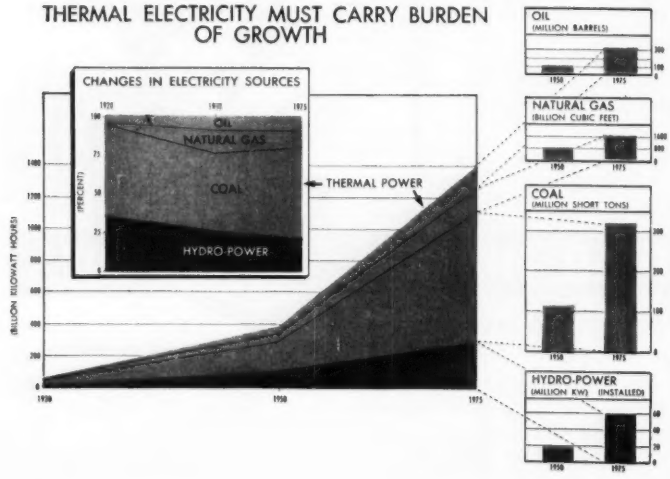
If, by that time, a more economic means for getting gas from coal or other materials is developed, the picture will change considerably, of course. And prospects along those lines may be a lot brighter in 1975 than they are right now.

Back to Coal? Because it's less convenient to use, bulky to handle and ship, the demand for coal has not kept pace with the demand for gas and oil. Demand will increase about 60% by 1975, but even so the importance of coal relative to other fuels will continue to decline.

However, coal reserves are ample to furnish the country's energy requirements for a long time to come and improved technology will help keep the costs down. When the costs of gas and oil start to climb, coal will take on a larger share of the country's energy burden.

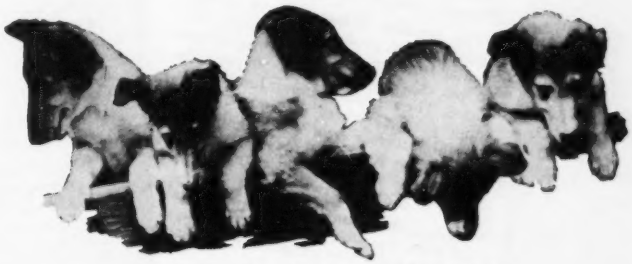
More than Double: At present, about one quarter of the electricity produced in this country is supplied by hydro-power, the rest from fuel-fired plants. To meet the Commission's projected demands for 1975, generating capacity will have to be boosted two and a half times. Here's how it figures the contributions from the various sources:

- Fuel-fired plants: All indications are that fuel-fired plants will play a bigger role in the future. Although electricity so produced is generally



* In "The Outlook for Energy Sources," Vol. III in the Resources for Freedom series. For a report on Vols. I and IV, see CW, July 5, '52.

Quality and Quantity too...



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- Sulphuric Acid
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· Davison Bulletin ·

Davison Produces Raney Nickel Catalyst

Production of Raney nickel catalyst, widely used in industrial hydrogenation operation, has been started by The Davison Chemical Corporation in its Specialty Catalyst Plant.

The product is essentially a spongy form of nickel, produced by leaching aluminum from an alloy of approximately 50 per cent aluminum and 50 per cent nickel. The resultant catalyst has a maximum particle size of 140 mesh and a very high surface area. When used in hydrogenation Raney nickel catalyst can be filtered out and reused as many as 250 times or more.

For information and a complete Product Data Sheet on Raney nickel catalyst, mail the coupon or contact your Davison Field Service Engineer.

Investigate Davison Silicofluorides

Davison's Potassium Silicofluoride (K_2SiF_6), Sodium Silicofluoride (Na_2SiF_6), Zinc Silicofluoride ($ZnSiF_6H_2O$), Magnesium Silicofluoride ($MgSiF_6H_2O$), and Ammonium Silicofluoride ($(NH_4)_2SiF_6$) can be all important to you as chemical intermediates. Their acidic properties and fluoride content can help you in your manufacturing processes, enabling you to produce a better or more economical product.

Davison's Silicofluorides have found wide applications, such as: a gelation agent in the production of foam rubber; the production of zirconium fluoride; electroplating; a low cost flux and opacifying agent in titanium frits; catalysts for plastic materials; insecticides; water fluoridation, etc.

Many new and varied applications are being discovered through Davison's Research and Development program. Davison Silicofluorides, development facilities and research personnel are at all times available to help you with your particular problem. For samples, prices, and further information, contact your Davison Field Service Engineer or mail the coupon.

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more expensive than that from hydropower, technological improvements hold promise of reducing the costs. Coal, in particular, seems destined for wider use as a source of electric power.

• Hydro-electric plants: In addition to 16.5 million kw. of installed hydroelectricity, another 8 million kw. is either completed or under construction. Another 8 million kw. could be added by the construction of the St. Lawrence project, by the completion of government programs on the Columbia River and the redevelopment of Niagara Falls. Thus, hydro capacity could be doubled in the next ten or fifteen years. But although other attractive sites remain, the possibilities for large blocks of low-cost hydropower are steadily diminishing.

• Nuclear energy: Nuclear fission has long been postulated as a potential source of electric power. But that project is still at least ten or fifteen years away and the chances are that the atomic energy industry will remain a heavy net consumer of electricity.

Fiberfrax Debut

At Niagara Falls last week, Clinton Robinson, president of The Carborundum Co. took the wraps off his company's new Fiberfrax ceramic fiber (CW, Aug. 9). Unlike its more glamorous cousins, the new fiber is being aimed straight at industrial applications.

All the tests on the new product aren't in yet, but Robinson reports that it is already finding applications in jet engine work, is hopefully eyeing a spate of markets among chemical process firms.

He points out, for instance, that the material is inert. That, combined with the fineness and random arrangement of its fibers, might make it valuable as a filtering material in chemical processing.

Robinson adds that it will not lose its properties on exposures to temperatures up to 2,300 F and will not soften at temperatures up to 3,000 F. Thus he expects that it can substitute for or combine with asbestos in many places.

Moreover, he thinks that the fiber can compete with high quality refractory brick even at the pilot-plant price of $1 a lb. There, savings through increased efficiencies and weight (2 lb. per cu. ft.) should be impressive enough, says Robinson, to warrant use of the often costlier material.

Currently, the Office of Naval Research is studying Fiberfrax for use in specialized papers. And Robinson reports that it can be bonded into insulating panels that will resist fire, prevent heat loss and, at the same time deaden sound. Other potential markets: in heavy duty brake linings, as a vibration dampener, in high-temperature gaskets, as a reinforcing filler in formed plastic laminates.

Blowing it Up: Raw materials for fiber are chiefly aluminum oxide and sand. They are introduced into an electric furnace and when they reach the molten state, are subjected to a stream of high-pressure air. The result is fluffy, cotton-like mass made up of tiny fibers that run up to three in. in length, but have an average thickness only one quarter that of silk.

The research program that led to the development of the fiber was headed up by Harry C. Martin (who also developed the fiber-backed sander discs used in sanding automobile bodies). Martin got the idea during some earlier work on alumina "bubbles" used as insulation in high-temperature commercial applications.

The "bubbles" are made by blasting molten alumina with a stream of air. Martin and his co-workers noticed that occasionally very fine fibers were formed in the process. By adding silica to the alumina and by adjusting the process variables, Martin eventually came up with the present pilot-plant process. As he points out: "All that we're doing is blowing each alumina bubble into a tiny fiber."

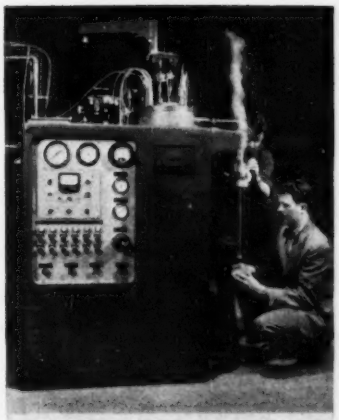
EQUIPMENT . . . .

Seal-less Pump: Chempump Corp. (Philadelphia) has recently been formed to manufacture its Chempump, a magnetic-drive, single-moving-part integral motor-pump unit. Constructed of stainless steel and in one-, two-, and three-horsepower sizes, the new pump is claimed to operate with reduced maintenance and servicing. Other advantages: seals and stuffing boxes are eliminated, external lubrication not required, no fluid loss allowed, cheaper installation.

This new pump was designed for special applications such as high-pressure use (to 150 psi), high vacuum, and where escape of such harmful substances as corrosive vapors and radioactive liquids must be prevented. The stainless steel construction will handle most liquids except halogen acids.

•

Dyeing Machine: A new pressure fabric dyeing machine, said to be the first major change in batch dyeing methods for fabrics in 500 years, has just been displayed by Du Pont Co. Although still in the development stage, the



Transferring liquid helium to external dewar. A built-in test chamber also allows tests within the cryostat at controlled temperatures down to −271°C (within 2 degrees of absolute zero).

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new unit, a product of the Textile Research Division of Du Pont's Newport Textile laboratory, is claimed to facilitate and perfect the dyeing of new synthetic-fiber fabrics, particularly those of Orlon acrylic fiber and Dacron polyester fiber. Dyers will be free to use the new machine, the Barotor, without royalty.

•

Packaged Pumps: Aurora Pump Co. (Aurora, Ill.) is now offering a new line of packaged Aurora close-coupled pumps covering the capacity range from 5 to 150 gpm at heads up to 110 feet and speeds of 3500 rpm. The line includes 29 combinations in ¾", 1¼", 1½" and 2" sizes and is available with either three-phase or single-phase motors. These pumps are recommended for general service or as an integral part of such equipment as air conditioners, cooling towers, evaporator coolers and hot water circulators.

•

Filtration-Extraction Process: A new filtration-extraction process for recovering oil from cottonseed, rice bran and other oil seeds, is now being marketed by the Chemical Plants Division of Blaw-Knox Co. (Pittsburgh). Claims are that the new plant is particularly suited to the needs of the small cottonseed processor because it offers a process utilizing conventional equipment for linting, hulling, rolling and cooking and provides the advantages of direct solvent extraction of a variety of oil seeds.

•

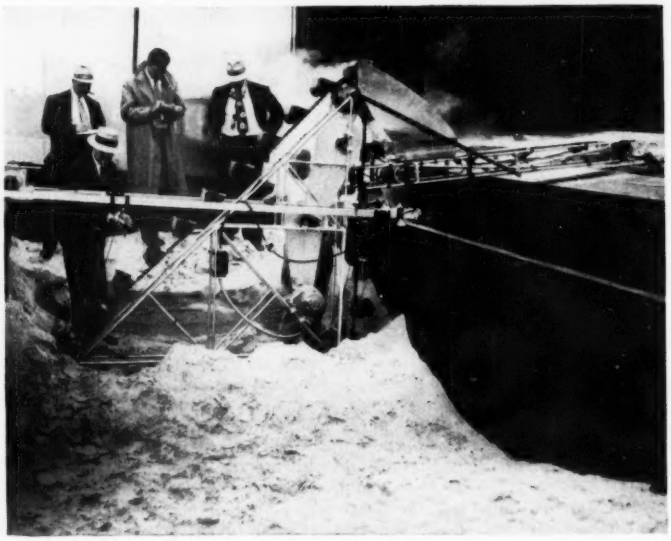
Pulverizer Additions: Rounding out its line of pulverizers, Pulva Corp. (Perth Amboy, N. J.) is now marketing two new models. The firm reports it has five models able to meet all pulverizing requirements. The small one works on a ¾ hp. motor, the biggest on a 100 hp. motor.

•

Electronic Tube: Haledy Electronics Co. (New York) is now offering a new cold cathode tube of unlimited life. The new tube, the Haledy TT-1, is said to operate under any temperature conditions, eliminates warm-up time, stand-by currents. Required grid current is less than one micro-ampere and amplification of 2½ million times is obtained. Recommended use: Pilot relays, liquid level controls, etc.

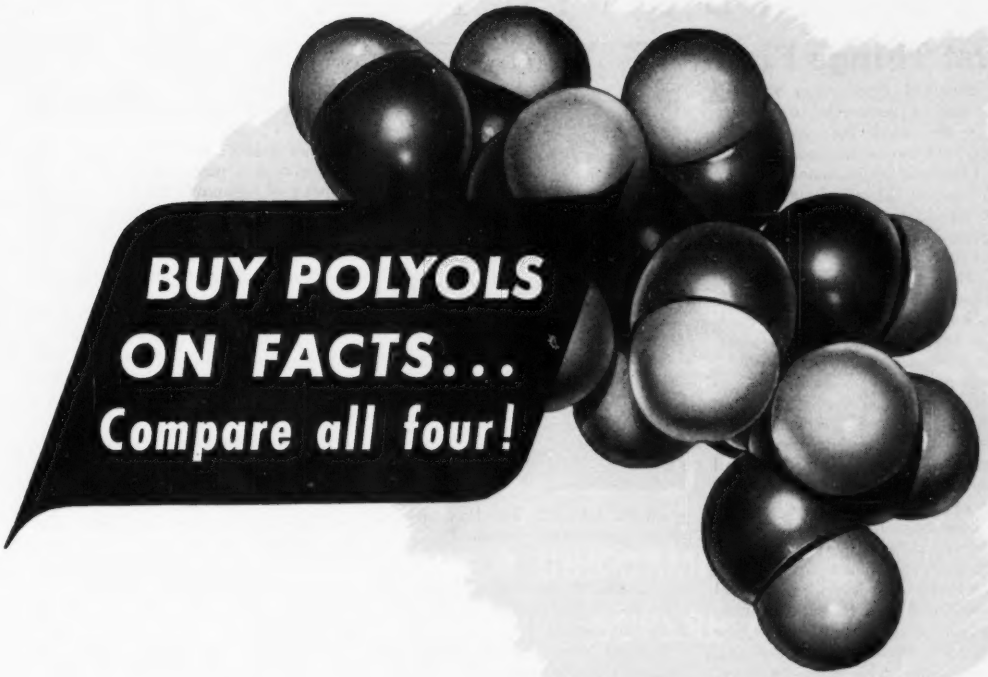
•

Small Toggle Switches: A series of small toggle switches adapted for precise switching in unusually small spaces, is now being made by the Micro division of Minneapolis-Honeywell Regulator Co. (Freeport, Ill.).



Revolving Time Saver

A NEW UNLOADER for boxcars and gondolas, made by the Rajon Co. (Maywood, Calif.) is shown being put through its paces at a demonstration for officials of the Illinois Central Railroad. Recommended for chemicals, sand, gravel, and other granular materials, the unloader is said to permit sizable savings in labor and time. One man, for example, can unload a 50-ton gondola in three hours. Using manual labor, the same job would take two men over eight hours. Rajon also makes a bigger machine.



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First Things First

The chemical distribution scene is never one of uneventful tranquility, but by this week the repercussions arising from the acquisition of Algonquin Chemical by National Distillers (CW, August 2) are being clearly heard throughout the industry.

One major result has been the sudden end of one of the fastest-growing and most unusual of the newer "small" chemical companies—unusual in that it stuck close to its basic, heavy-inorganic beginnings. In four years, buying or leasing government-owned facilities, Algonquin had become an important factor in the sulfuric and caustic-chlorine worlds, thereby standing as a living proof that there is still opportunity in chemicals for the small entrepreneur, even in the hefty-capital sphere of heavy chemicals.

Another outcome of the move will be that an old-line organic sales force, that of the U. S. Industrial Chemicals Co. (an earlier acquisition of National Distillers), will soon be offering these heavy inorganics in addition to its line of alcohol-derived chemicals, resins, and insecticides. This will be a reversal on the usual routine in which veteran salesmen, straining to keep up with their company's diversification programs, find themselves taking a refresher course on the mysteries of the benzene ring.

Feet on the Ground: But the most significant facet is the insight provided into National Distillers' chemical plans. There can be little doubt now that this leading liquor distiller is planning no shortcuts in its program to become a full-fledged member of the chemical process industries family.

A great many of the non-chemical firms which have lately broadened out into the now-attractive chemical field have done so by plunging into the manufacture of the newer, and more profitable, chemical end products. National Distillers, on the other hand, has notified the industry by its buying of Algonquin that it is "in chemicals" for the long haul and is willing to carry its share of the load in providing the low-profit, high-volume commodities which are the foundation of chemical commerce. And indications are that additional, similar assurances are in the offing.

The two men who were brought into National Distillers to set its sails in a chemical direction, president Jack Bierwirth and chemical v. p. Bob Hulse, feel that they are building for the future. Hulse points out that a strong "chemical company," in the true sense, must be integrated from

ROBERT HULSE: For National Distillers, a vertical integration.

the ground up. The purchase of Algonquin indicates that he is planning a vertical integration in both directions at the same time.

Limited First Step: The company's original chemical move was long on money invested, but short on total impact upon the rest of the industry. In June of 1950, its vast sodium operation at Ashtabula, Ohio, went on stream, turning out bulk quantities of chlorine and metallic sodium. The number of customers, however, was limited—most of the sodium going to large contract buyers like Du Pont and the Procter & Gamble Co. All of the chlorine went next door to Hooker-Detrex's trichlor- and perchlorethylene plant. No extensive chemical sales force was needed for this type of operation.

The next development, however, put National Distillers squarely into the center of the chemical-commerce whirl.

During 1951 it bought complete control of U. S. Industrial Chemicals, a major producer of industrial alcohols, esters, and intermediates. With it, National Distillers obtained a six-plant manufacturing operation and a smoothly operating chemical sales organization. The latter group will apparently be used as the base for most of the parent company's future chemical marketing activities.

A case in point is the decision to have USI handle the products to be produced at the Tuscola, Ill. plant now being built by the National Petrochemicals Corp., which is 60%-owned by National Distillers, 40% by Panhandle Eastern Pipeline Co. According to present schedules, this plant will be turning out purified hydrocarbons by the end of this year and should be in production on synthetic ethyl alcohol and ethyl chloride by July, 1953.

Sure Source: It is the raw-material needs of this plant which led to the buying of Algonquin. Chlorine will be needed at the rate of 40 tons a day for the ethyl chloride operation, and none of the established producers had this much to spare on a long-term basis.

Casting its eye about in search of a solution to the problem, National Distillers couldn't help noting that the second closest chlorine production point, other than Wyandotte, Mich., was the government-owned facility at Huntsville in northern Alabama. This had been leased to Algonquin Chemical just a few month earlier for a ten-year period. The eventual outcome of the negotiations that followed was the decision to take over the entire assets of the heavy-chemical fledgling.

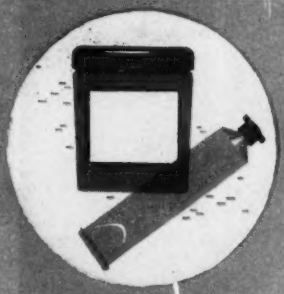
With the Huntsville chlorine, National Distillers also found itself in the business of selling caustic and sulfuric acid. The latter comes from the plant it now owns in Dubuque, Ia., and a leased plant at Lawrence, Kansas. Moreover, it will have an additional 60 tons a day of chlorine to distribute from its Huntsville operation. Chances are that all of this will be handled by the USI sales force.

Now that National Distillers has entered willy-nilly into the sulfuric acid business, rumors are rife in the trade that it will take a step further. Original plans had called for Stauffer Chemical to build a plant at Tuscola to supply the acid needs of the alcohol process; in fact, Stauffer has already bought the necessary land. But now the guesses are that National Distillers will negotiate a settlement with Stauffer and will build its own plant, letting USI handle the sale of the excess and spent acids.

With chlorine from Huntsville, ethane from the Panhandle partner, and sulfuric from an on-the-premises plant, Hulse could then claim that he has done the ultimate in vertically integrating his new Tuscola venture.

Small Shippers Suffer

Interstate Commerce Commission officials faced a tough problem last week. Before the weekend they had to decide whether or not to suspend a special 75¢ surcharge, effective this week, which Southern truckers want to tack on all shipments under 1,000 pounds. The outcome will be one more phase of a continuing struggle



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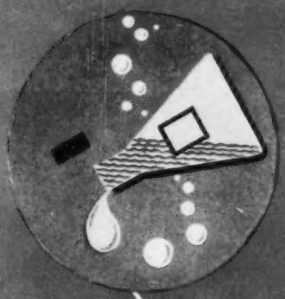

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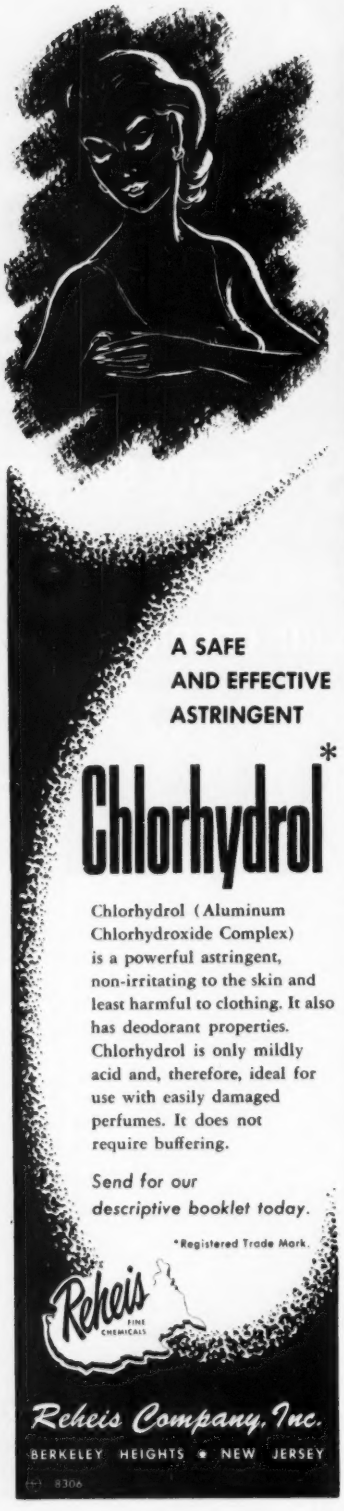
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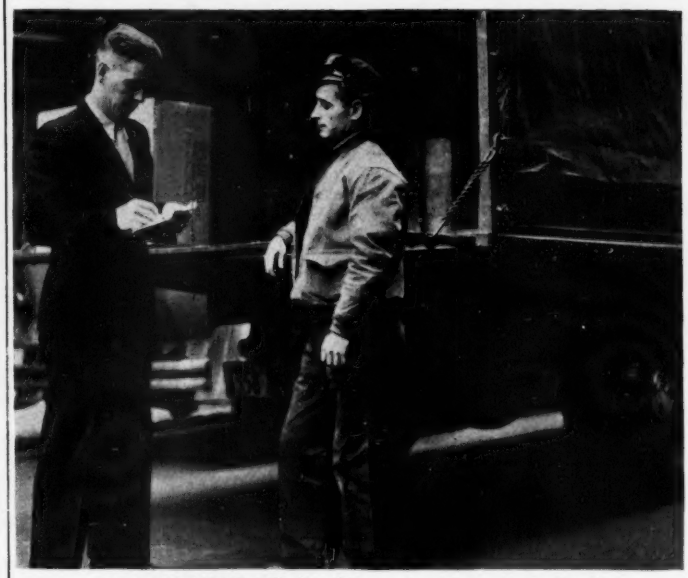

LTL SHIPMENT: What's a fair way to make it pay its share?

between small shippers and the carriers who claim that they are losing money on providing such service.

Across the country, a variety of small-quantity surcharges and special rates are cropping up, causing mixed reactions among shippers of chemical products. For instance, the $1.50 charge being applied to shipments under 5,000 pounds in the Indiana, Illinois, and Ohio area has brought forth this type of comment from chemical traffic managers contacted by CW:

- "We're against it. It's unfair to the 3-4,000 pound shipper—and 60% of our shipments are in this class. It brings freight rates up much too high."
- "The surcharge has hurt the little shipper and receiver. It makes things rough for companies with small production capacities or with no room for large inventories."

But the carriers themselves have powerful allies among the large-volume shippers who realize that, in the long run, it will hold their own transportation costs down if greater differentials are established for weight differences. As one major phosphate producer put it: "We're not much concerned with the [small quantity] surcharge because the bulk of our shipments are heavily loaded—but I do think the smaller shippers should assume their proportional share [of transportation costs]."

Inherited Trouble: The truck lines claim that they got into their present position—necessitating a belated crackdown on small shipments—as a direct result of following established railroad policy. They now see that it was a mistake to mimic the railroads' method of maintaining good relations all around by losing money on the smaller movements and making it up on the large, thereby preserving what, from the outside, seemed like a reasonable differential between the two. The error came in not realizing that only an estimated 2% of a railroad's tonnage is in the less-than-carload classification—whereas the motor carriers' proportion is vastly larger.

With trucking costs rising steadily across the board, the truckers now feel that the subsidization of the small shippers by their large customers has reached an unfair limit. The current uproar in trucking circles amounts to a trial-by-error method of finding the most equitable basis for ironing out the problem.

Fair and Square: Essentially, the truck lines are searching for a dollar-and-cents figure which will represent the costs of handling a small shipment—irrespective of its weight. Larger shipments can follow a weight-rate basis because the out-of-pocket costs are roughly proportional to the quantities involved, but in the smaller weight brackets, it does not cost much more to pick up and deliver a 500 pound barrel than it does to handle a 100 pound keg. Two ways of reflecting this near-equality would be to set up a minimum charge on all shipments or to establish a per-pound rate for the keg at nearly five times that for

the barrel. Neither of these seems entirely fair and satisfactory to the truckers, however; hence the present experiment with surcharges.

ICC's reaction to the device has been mixed. The bureau does not usually become involved in truck-rate questions unless a sufficient number of shippers file complaints. Over 150 such requests for an investigation have been received already concerning the $1.50 surcharge now being applied in the Midwest, yet ICC states that it still has not made up its mind on the matter.

In contrast, it slapped down an attempt to put a similar charge on small shipments moving between the Midwest states and the South. These were suspended in July, and the carriers do not plan on appealing the ruling. Truck lines between the Mississippi and the Rockies are considering a variation on the surcharge idea. Some of them would like to charge an extra 10¢ per cwt. on shipments under 1,500 pounds, starting this fall.

On another front, but for similar reasons, several of the railroads have been pressuring ICC for permission to cancel free pick-up and delivery services. All in all, whatever the outcome of these moves, there can be no doubt that transportation costs for the small shipper are due for a more than normal increase in the immediate future.

Explosive Success

Alaska and Hawaii delegates have won their fight to relax the Coast Guard limitations on dynamite shipments into their territories (*CW, June 28*). President Truman has signed a new law which allows the local authorities to set the limits—with a power of veto still allowed the Coast Guard.

In the case of Honolulu port, for instance, island officials wanted to put the ceiling under the new statute at 400,000 lbs. per vessel (former limit: 500 lbs.), which would allow them to fill the territory's requirements with just four shipments a year. But the Coast Guard felt that this was too high, and a compromise was reached at 200,000 lbs. For inter-island commerce, a limit of 20,000 lbs. per shipment has been set.

•

Antibiotics in Rio: To facilitate the distribution of its antibiotic pharmaceuticals in Brazil, Chas. Pfizer & Co. (Brooklyn) has set up a subsidiary, Pfizer Inter-American, S. A., to handle a direct, on-the-scenes operation. Present plans call for a plant in Sao Paulo and a main office in Rio de Janeiro which will handle the processing and

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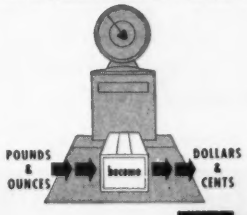

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subdividing of products shipped in from the U. S. Serious consideration, however, is being given to the possibility of manufacturing a number of the pharmaceuticals in Brazil from basic raw materials.

•

Chlorine Hazard: A switch engine mishap, in the Houston yards of Diamond Alkali Co., has given that chemical center an effective object lesson on the ever-present dangers of handling hazardous materials. The engine inadvertently bumped a chlorine car which was in the process of being loaded. The jar ripped loose the rubber and metal filling hose, and it was twenty minutes before the flow of chlorine gas could be shut off. Twenty-eight persons were hospitalized and another three hundred treated for gas poisoning.

•

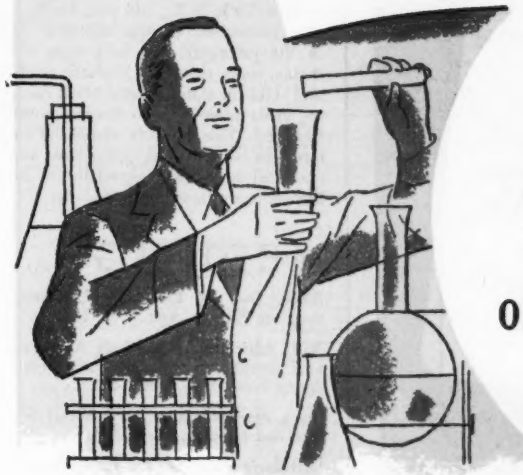
Denver Headquarters: As a logical outgrowth of its Julius Hyman & Co. purchase, Shell Chemical Corp. has chosen Denver as its headquarters for the marketing of all Shell agricultural chemicals except fertilizers. Manufacturing and research activities for these products has been centered at the nearby Rocky Mountain Arsenal plant. The new marketing organization will be known as the Julius Hyman & Co. Division of Shell Chemical.

•

Reverse Trend: Running countercurrent to today's fad of forming special export sales divisions, the Commercial Solvents Corp. has combined its foreign and domestic drug sales under a single Pharmaceuticals Division head. The move came on the retirement of the domestic division's former manager, M. M. "Rick" Ricketts. The man selected to replace him, T. P. DeFarkas, had been handling CSC's overseas selling operations and it seemed simpler just to combine the two operations into an expanded division rather than to appoint a new manager for DeFarkas' former export group.

•

Setting the Course: "Market research is as important to modern business and industry as radar is to safe navigation," says Du Pont v.p. J. Warren Kinsman in a special section of "quotes" filling several pages of a new booklet on market research which is available (for 25¢) from the Sales Executive Club of New York. Designed to sell the values of such work to executive managements, "What Marketing Research Can do for Business Executives" covers the field in clear, forceful language, amply illustrated with pencil drawings.



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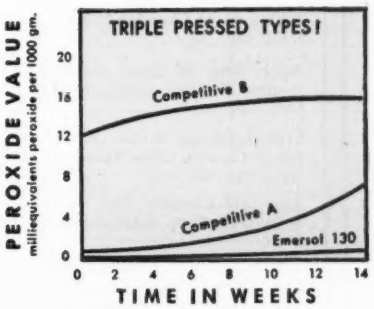

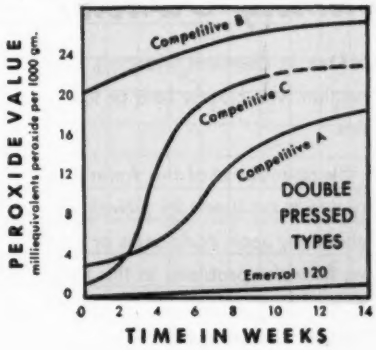

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BOOKS...

Properties of the Principal Fats, Fatty Oils, Waxes, Fatty Acids and their Salts, by M. P. Doss. The Texas Co., New York, N.Y.; 244 pp., $5.00.

The properties of approximately 50 of the principal fats, fatty oils, and waxes; more than 800 aliphatic acids, and data on salts of fatty acids ranging from aluminum to zirconium are included. This book is of special interest to the fatty oil, petroleum, and chemical industries, especially to lubricant manufacturers.

MEETINGS...

Amer. Inst. of Elec. Engrs., general meeting, Phoenix, Ariz., Aug. 19-22.

Natl. Agricultural Chemicals Assn., annual meeting, Essex and Sussex Hotel, Spring Lake, N.J., Sept. 3-5.

Amer. Standards Assn., Museum of Science and Industry, Chicago, Sept. 8-10.

Instrument Soc. of Amer., conference and exhibit, Cleveland, Sept. 8-12.

Amer. Soybean Assn., annual convention, Purdue Univ., Lafayette, Ind., Sept. 9-11.

National Chemical Exposition, Coliseum, Chicago, Sept. 9-13.

Natl. Petroleum Assn., annual meeting, Traymore Hotel, Atlantic City, Sept. 10-12.

Amer. Chem. Soc., national meeting, Atlantic City, Sept. 14-19.

Heat Exchange Inst., Skytop Lodge, Skytop, Pa., Sept. 24-26.

Drug Chemical, and Allied Trades section of N.Y. Bd. of Trade, annual meeting, Pocono Manor Inn, Pocono Manor, Pa., Sept. 25-28.

Natl. Assn. of Corrosion Engrs., New Orleans, Oct. 1-3.

Amer. Tung Oil Assn., annual meeting, Admiral Semmes Hotel, Mobile, Ala., Oct. 8-10.

Compressed Air & Gas Inst., Shawnee Inn & Country Club, Shawnee-on-Delaware, Pa., Oct. 8-10.

Amer. Oil Chemists' Soc., fall meeting, Netherlands-Plaza Hotel, Cincinnati, Oct. 20-22.

Natl. Pest Control Assn., annual meeting, Rice Hotel, Houston, Oct. 20-22.

Natl. Safety Congress & Exp. of the Natl. Safety Council, Chicago, Oct. 20-24.

Amer. Drug Mfrs.' Assn., accounting section, annual meeting, Greenbrier Hotel, White Sulphur Springs, Oct. 27-29.

Amer. Gas Assn., annual convention, Atlantic City, Oct. 27-30.

Assn. of Consulting Chemists & Chemical Engrs., annual symposium, Belmont Plaza Hotel, New York, Oct. 28.

COMPANY	PLANT LOCATION	Aureomycin	Bacitracin	Chloromycetin	Citric Acid	Dextran	Feed Supplements	Enzymes	Gluconic Acid	Gramicidin	Neomycin	Penicillin	Polymixin	Riboflavin	Sorbose	Streptomycin	Terramycin	Tyrothricin	Viomycin	Vitamin B_{12}
Abbott Laboratories	N. Chicago, Ill.							x					x				x			x
J. T. Baker Chemical Co.	Phillipsburgh, N. J.						x						x							
Bristol Laboratories	E. Syracuse, N.Y.							x					x							
Commercial Solvents Corp.	Terre Haute, Ind. Peoria, Ill.			x			x		x				x		x					x
Cutter Laboratories	Berkeley, Calif.												x							
Dextran Corp. Div.	Yonkers, N.Y.						x													
Dawe's Manufacturing Co.	Newago, Mich.														x					x
Heyden Chemical Co.	Princeton, N.J.								x			x	x				x			
Hoffman-La Roche, Inc.	Nutley, N.J.														x[1]	x[1]				
Lederle Laboratories	Pearl River, N.Y. Willow Island, W.Va.	x		x				x	x				x							x
Eli Lilly & Co.	Lafayette, Ind. Indianapolis, Ind.												x				x			x
Merck & Co.	Rahway, N.J. Elkton, Va.								x				x		x[1]		x			x
Miles Laboratories	Elkhart, Ind.					x														
Pabst Brewing Co.	Peoria, Ill.			x				x	x						x					x
Parke Davis & Co.	Detroit, Mich. Holland, Mich.				x															
S. B. Penick & Co.	Lyndhurst, N.J.			x															x	
Chas. Pfizer & Co.	B'klyn, N.Y. Groton, Conn. Terre Haute, Ind.			x		x			x	x			x	x	x	x	x	x		x	x
Publicker Industries	Philadelphia, Pa.								x						x					x
Rohm & Haas Co.	Bristol, Pa.							x												
Schenley Laboratories	Lawrenceburg, Ind.								x				x				x			
Schering Corp.	Union, N.J.										x									
E. R. Squibb & Sons	New Brunswick, N.J.								x				x				x			x
Stauffer Chemical Co.	Callender, Calif.					x[1]														
Takamine Laboratories	Clifton, N.J.							x												
U. S. Industrial Chemicals Div.	Baltimore, Md.			x					x				x		x					x
Upjohn Co.	Kalamazoo, Mich.			x								x	x				x			x
Wallerstein Co.	Staten Island, N.Y.							x			x							x		
Wyeth, Inc.	Westchester, Pa.												x							x

x[1] Non-fermentation, synthetic product. x[2] Intermediate for captive use. x[3] New plant slated for early output.

Antibiotics Up-To-Date: Changing Pattern

(Turn page for story)

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antifoams	stabilizers
wetting agents	lubricants

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Antibiotic Update:

Two new developmental therapeutic antibiotics, the chloromycetin dilemma, and the surge for industrial applications highlight recent developments on the bustling antibiotics scene. In the decade or so that antibiotics have been with us, the commercial picture has not undergone a drastic shakeup; penicillin and streptomycin are well out in front, in little immediate danger of being overtaken.

But antibiotic research and development has been in a state of flux almost from the start—ever shifting in an effort to fulfill the latent capabilities of the wonder drugs.

The broad-spectrum antibiotics might well be considered the first fruits of the greatest part of this effort: the drive to extend the therapeutic utility of antibiotics. Broad-spectrum drugs—Pfizer's terramycin, Lederle's aureomycin and Parke, Davis' chloromycetin—brought a number of serious diseases (typhoid, undulant fever, Rocky Mountain spotted fever, etc.) into the antibiotics' sphere.

Latest dividend of this line of research activity is Ilotycin (*CW, July 5*), a new, clinically promising broad-spectrum agent. In addition to its wide range of therapeutic effectiveness, Ilotycin's marked lack of toxicity bodes well for its commercial chances.

Another low-toxicity substance that potentially broadens the antibiotics' range of medical value is Vivicil (*CW, May 3*), a new product of research by Schenley Laboratories. Vivicil cuts into the province of fungus-caused diseases, is active against most pathogenic fungi.

Although the newer broad-spectrum materials have dented the market for penicillin and streptomycin, their prime impact has been to increase in substantial measure the over-all demand. Antibiotic consumption is making steady strides. One large manufacturer estimates that about 25% of all medical patients are now treated with antibiotics in one form or another, expects the trend to continue until the figure is somewhere between 40% and 50%.

But extra-medical pursuits have stolen the recent antibiotics research show, underscored its flexibility and growing diversity. Animal feed supplements today are big business for antibiotics manufacturers, account for relatively great quantities of inexpensive bulk penicillin, terramycin, bacitracin, aureomycin each year. Other new agricultural developments, synthetic sow's milk and pellets for sub-

Changing Pattern

dermal implantation, have opened promising new markets for terramycin and bacitracin.

The push for industrial applications independent of animal nutrition is the newest phase of research. Antibiotics are giving hopeful experimental results in treating crop diseases, protecting fruits in storage, controlling fungus attack on paints, plastics and a number of industrial products. An antibiotic even has been found to be of value in treating a fatal disease of honey bees.

These industrially-promising antibiotics carry names like thiolutin, fumagillin, rimocidin, and subtilin. Unless you're in the business, the chances are that you have never heard of them. They are not produced commercially yet. But for the latest on those that are (along with other selected fermentation products), and who makes them, see the chart† on page 47.

Rewards for Inventors

Research chemists and engineers working for federal agencies will get a better deal on their inventions if a report just issued by the Government Patents Board is acted upon.

Outlining a comprehensive program to recognize and reward inventions by government employees, the report* is the work of an inter-agency committee appointed to make a study, submit its recommendations.

The report discusses and analyzes the problems involved in such a program, examines already existing statutory provisions and compares them with the practices and experiences of American industry and of foreign governments.

Archie M. Palmer, Chairman of the Board, says that the proposed program has already been brought to the attention of the heads of all departments and agencies of the Executive Branch of the government and to the attention of Congress.

Out of the study he hopes will come: (1) new legislation providing the necessary comprehensive program and (2) immediate steps to make the fullest use of existing statutes for rewarding government employee-inventors.

Everybody In: The proposal urges the following principles in the treat-

† Compiled with the assistance of the late R. D. Petty, New York consulting engineer and fermentation process authority.

* "A Proposed Government Incentives, Awards, and Rewards Program with Respect to Government Employees," 15¢, Government Printing Office, Washington 25, D.C.

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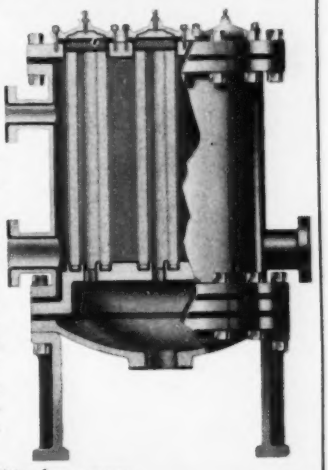

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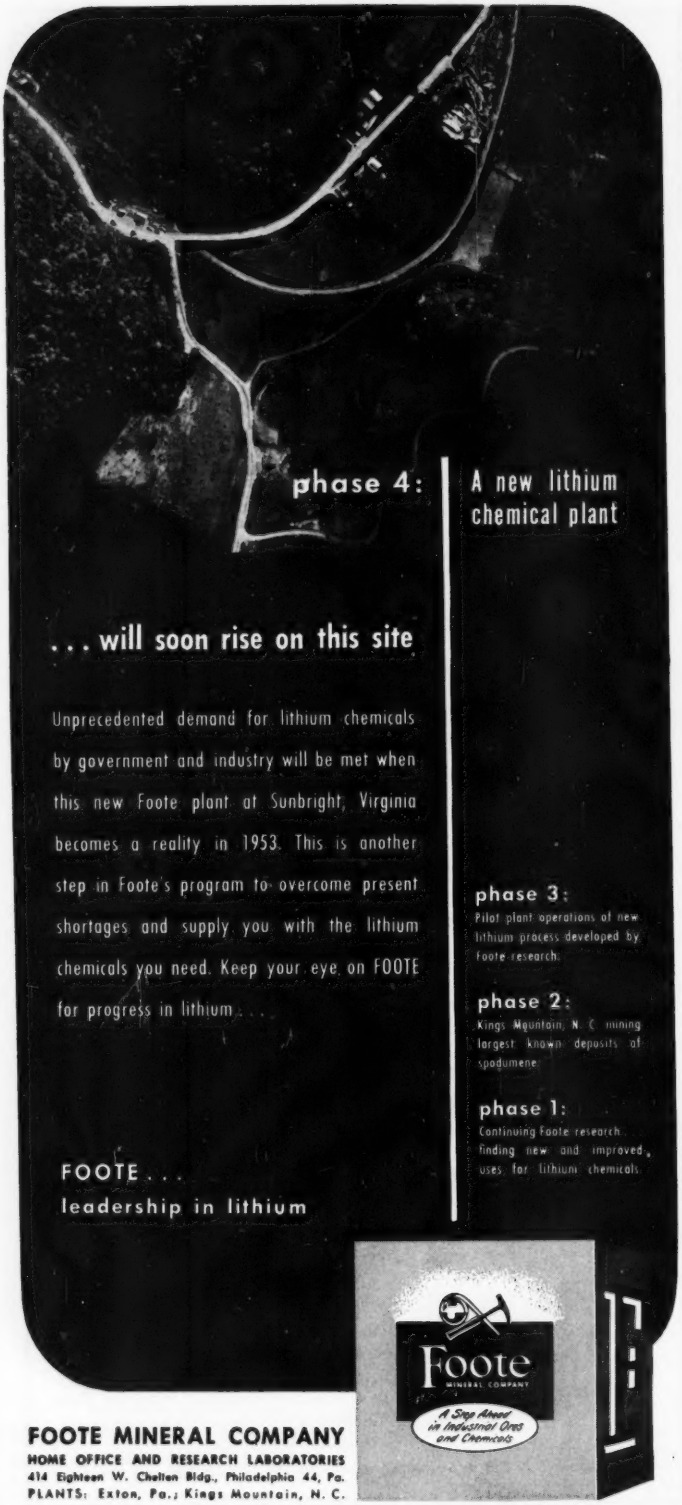
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phase 3:
Pilot plant operations of new lithium process developed by Foote research.
phase 2:
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phase 1:
Continuing Foote research finding new and improved uses for lithium chemicals.
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ment of the employee-inventor:

- That all civilian employees of the government be eligible.
- That even employees who are assigned to jobs most likely to produce inventions should be included.
- That two types of awards be recognized: (1) cash awards, sufficiently flexible to take care of meritorious creative contributions and inventions of outstanding value; and (2) honor awards.

The committee recommends against specific ceiling limitations for each agency; urges that legislation permit the transfer of funds from one agency to another to handle the situation of inventions involving more than one agency or subsequent change in employment of inventors from one agency to another; and suggests that group awards be made possible for situations where more than one individual is involved in an invention.

The report further recommends that existing incentive programs should be more uniformly applied to inventors in the government; that all Federal agencies review existing programs so that current laws can be used to the fullest benefit of the employee-inventor; and that awards to employee-inventors be fully publicized to stimulate further inventive efforts.

RFC Studies Rubber

Reconstruction Finance Corp. has approved a $6.5 million research and development program on synthetic rubber for the fiscal year ending June 30, 1953.

During this fiscal year emphasis will be on improving the quality of synthetic rubber for more extensive use in large-sized tires, on improving the quality of cold rubber latex, and on assisting national defense groups in their search for improved synthetic rubber for special purposes.

Fundamental research at universities and elsewhere in the program originates and clarifies scientific ideas for new polymers, which are developed in industrial and government pilot plants, tested in evaluation laboratories and on the government tire test fleet, and introduced into commercial production.

The current research program will be conducted for RFC by eight industrial organizations operating GR-S production plants, by the government laboratories operated by the University of Akron, by a government tire test fleet at San Antonio, Texas, by the National Bureau of Standards, and by ten universities, institutes and other research organizations.

The industrial organizations par-

ticipating in the program are the Copolymer Corp., Baton Rouge; Firestone Tire & Rubber Co., Akron, O.; General Tire & Rubber Co., Bay Town, Tex.; B. F. Goodrich Chemical Co., Akron, O.; Goodyear Synthetic Rubber Co., Akron; Kentucky Synthetic Rubber Corp., Louisville, Ky.; Phillips Petroleum Co., Borger, Tex., and United States Rubber Co., Naugatuck, Conn.

The universities, institutes, and other organizations cooperating in the research are the University of Akron; Burke Research Co., Detroit, Mich.; Case Institute of Technology, Cleveland, O.; University of Chicago; Cornell University, Ithaca, N. Y.; University of Delaware, Newark, Del.; University of Illinois, Urbana; Massachusetts Institute of Technology, Cambridge; Mellon Institute, Pittsburgh; and University of Minnesota, Minneapolis.

•

More on Soybeans: The Government soybean research program will be discussed by U.S. Department of Agriculture representatives at the annual convention of the American Soybean Association to be held at Purdue University Sept. 9, 10, 11.

Association Secretary-Treasurer George M. Strayer said that "it has been estimated that the release of new varieties alone by the U.S. Department of Agriculture has resulted in a 350-million-dollar annual addition to the national income."

•

Colloidal Selenium: A water-dispersible powder, containing 20 per cent selenium, is now being made by The Reheis Co. (Berkeley Heights, N.J.) Main uses: compounding of pharmaceutical preparations for the treatment of dermatoses.

•

Dairy Merger: Work has begun on a new research center for Carnation Co. at Van Nuys, Calif. The new facilities will cost $500,000, will house activities currently carried on at company laboratories in Oakland, Calif., Milwaukee and Oconomowoc, Wis.

A 30,000-sq.-ft., one-story structure, the center will consist of six laboratories, a pilot plant, offices and basement.

PICTURES IN THIS ISSUE:

Cover (top)—KLT photos; p. 12 (cartoon)—Peggy Rice, McGraw-Hill; p. 12 (left, No. 2)—Cornelius; p. 24—Syd Karson, McGraw-Hill; p. 29—McGraw-Hill Pacific Coast News Bureau; p. 42—G. A. Douglas, Gendreau.

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How dieselization of U. S. railroads is changing their chemicals purchasing pattern . . . what's ahead for resin sales as a result of the upsurge in shell molding . . . how Imperial Chemical Industries views the tariff-restricted U. S. market . . . which cortisone-producing process boasts what economic advantages . . .

CHEMICAL WEEK

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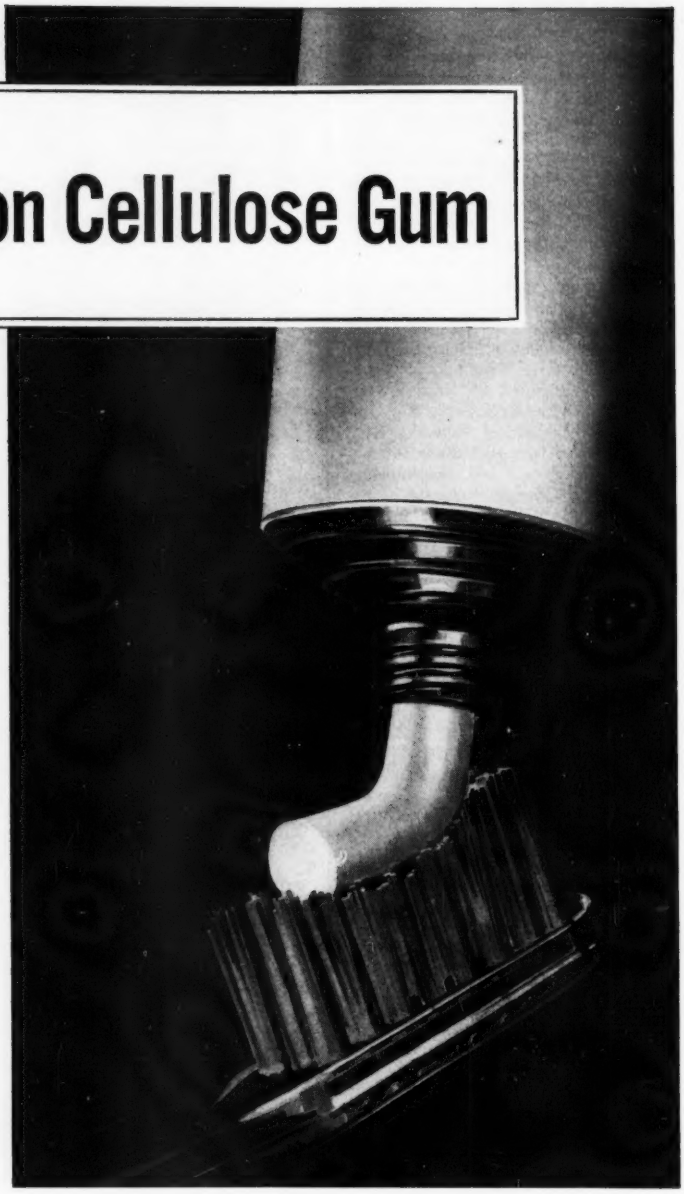

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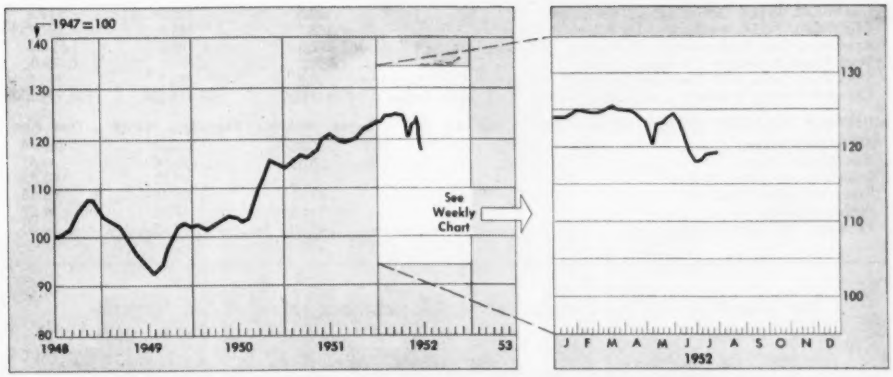

CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries

NEWSLETTER

Is sulfur supply and demand in balance, or isn't it? That question is being bruited about not only by consumers but also by producers of the chemical.

The sulfur shortage is virtually ended, says Freeport Sulphur Co. (second largest U. S. producer); it recently compiled a raft of figures to justify that conclusion.

On the other hand, Paul Nachtman, president of Mexican Gulf Sulphur Co., flatly contends that sulfur is still "in critical short supply," will probably remain in the tight category until 1955. (Mexican Gulf, a comparative newcomer in the field, will start turning out its first sulfur in early 1953; expects to hit 200,000 tons a year production.)

And what does the number one sulfur producer say? Texas Gulf prefers to remain aloof from any brewing long-short sulfur argument, parries all questions with a firm "No comment."

But this much is indicated: Texas Gulf has no plans to curtail production (1951, 3,255,000 tons of Frasch process brimstone) at any of its domes, indeed, hopes output from its latest (Spindletop, Tex.) will speed the day when Texas Gulf will be able to supply all its customers, all the time.

The law of supply and demand also rules the roost in zinc. Big supply, small current demand, is behind the latest cut (1½¢/pound) which carries the price of zinc down to a new low 13½¢. Zinc inventories mounted during the strike when the steel fabricators (major consumers for galvanizing) took very little zinc while output remained at previous high levels.

Galvanizers will not appreciably cut into zinc producer-held stocks, however, until steel production is back to normal—even with the inducement of lower prices. Reason: It takes time to fill the steel pipelines, get around to supplying galvanizers.

But not all prices are slipping. By this week most pigment makers have boosted prices about 2¢/pound for chrome (lead chromate) yellow and greens. It's a delayed action, but directly tied in with the last lead price increase (June). The pigment producers let pigment prices ride until lower-cost lead was used up, are now passing on the hikes. Current prices

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	120.5	120.0	119.3
CHEMICAL WEEK Wholesale Price Index (1947=100)	103.1	103.1	107.7
Bituminous Coal Production (Daily Average, 1000 Tons)	1,392.0	1,117.0	1,658.0
Steel Ingot Production (Thousand Tons)	1,981.0	1,737.0	2,029.0
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	250.5	250.5	246.6
Chemical Process Industries Construction Awards (Eng. News-Record)	$1,919,000	$8,414,000	$16,554,000
MONTHLY BUSINESS INDICATORS—WEEKLY WAGES	**Latest Month**	**Preceding Month**	**Year Ago**
All Manufacturing	$66.98	$66.61	$65.08
Non-durable Goods	60.68	59.56	58.47
Chemicals and Allied Products	70.52	69.73	68.72
Paper and Allied Products	67.52	66.46	65.56
Rubber Products	73.28	72.24	71.27
Petroleum and Coal Products	85.20	75.16	81.20

per pound: lead, 16¢; chrome yellow, 31¢; chrome green, 37-38¢ (depending on shade).

Reports continue to vary on movements of caustic soda. Liquid caustic producers envision some whittling of their high inventories. The reasons: Heavy orders placed by metal treaters last week; prospects of continuing demand with resumed steel production.

But the definite upswing in textiles hasn't—as yet—greatly affected sales of rayon-grade caustic.

On the whole caustic prices remain firm, the market steady, despite a few isolated instances of "concessions" (e.g., manufacturers allowing several small buyers to get together in their buying to reap the benefit of carload prices).

But a new peak in production of all forms of phosphatic fertilizers will be reached by July 1, 1954—if DPA's target for the industry is hit. The goal—3,600,000 short tons (in terms of available P_2O_5)—assumes U.S. will import 40-50,000 tons, increase domestic production capacity to 3,550,000 tons.

The boost amounts to 1,400,000 short tons over 1950-1951's 2,150,000 output. Regardless of other published reports (DPA tells *CW*), the goal is for all forms of phosphatic fertilizers including normal superphosphate, triple superphosphate, ammonium phosphate, nitrophosphate.

The long expected polyethylene decontrol action has finally been approved by NPA. Although the controls, governed by Schedule 5 to NPA Order M-45, are revoked this week, actual allocation of the basic plastic material will not end until September. The reason: Allocations are always made a month in advance.

Only Thiokol and methylene chloride, of a once long list of chemicals, remain under M-45.

Producers of gum naval stores, busy this week studying the provisions of USDA's program, will find this year's rate of payment (for the usual conservation practices) the same as last year's—with one addition. Payment of 2¢ will be made for each face (part of the tree chipped to make the gum flow) worked by the bark chipping method.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending August 11, 1952

DOWN

	Change	New Price		Change	New Price
Zinc Oxide, dom., acicular, car lots, deld.	$ .005	$ .475	Cadmium, Red, lithopone, bbls.	$ .07	$1.76

All prices per pound unless quantity is stated

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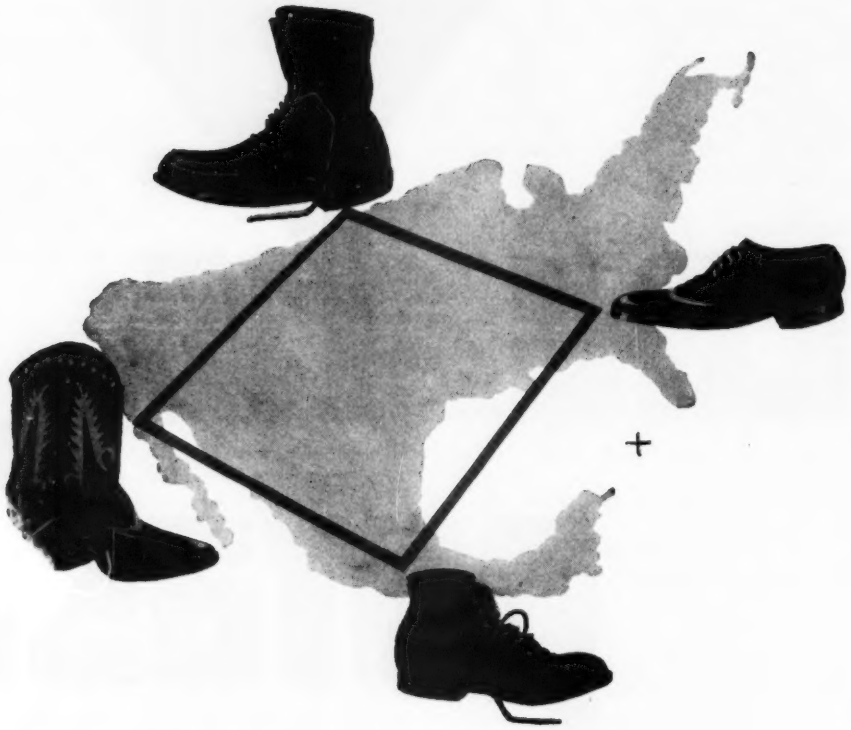

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I—Estimated Petroleum and Natural Gas Requirements for Petrochemical Industry in U. S.

	1950	1955	1965	1975
Primary products (million lbs.)	9.,900	20,240	37,470	54,180
Hydrocarbons going into product, including losses (million lbs.)	6,900	15,040	27,080	38,780
Percent of total petroleum and natural gas requirements	0.68%	1.1%	1.6%	2.0%
Hydrocarbon going into product and liquid degraded into fuel gas (million lbs.)	7,400	18,920	36,280	53,230
Percent of total petroleum and natural gas requirements	0.73%	1.4%	2.1%	2.7%
Hydrocarbon raw material and fuel requirements (million lbs.)	19,100	41,540	74,580	108,780
Percent of total petroleum and natural gas requirements	1.9%	3.1%	4.4%	5.5%

II—Raw Materials Required for Petrochemical End-uses

(millions of pounds per year)

	1955	1965	1975
Hydrocarbon raw materials to products and losses:			
For synthetic fibers	1,560	2,010	2,540
For synthetic rubber	1,980	2,590	3,130
For plastics	3,410	10,440	17,540
For surface coatings	1,150	1,830	2,530
For automotive chemicals	1,300	1,670	1,930
For nitrogen products	1,430	2,830	4,040
For detergents	580	860	1,020
Miscellaneous*	3,630	4,850	6,050
Hydrocarbon liquids degraded to fuel gas	3,880	9,200	14,450
Total hydrocarbon raw materials	18,920	36,280	53,230

(*—Includes insecticides, herbicides, dyes, miscellaneous solvents, etc.)

Not Much of a Dent

You may or may not agree with all the forecasts presented in the recent bulky (five volumes) Report to the President by his Materials Policy Commission, but whether you do or not one thing is certain: You'll be reading about it from now until 1975.

Much interest has centered about the Commission's long-range prognostications of petrochemicals requirements. This comparative new industry will not make as much of a dent in future petroleum and natural gas consumption as has been generally supposed.

Note (table I) that the petroleum hydrocarbon raw material consumed in producing petrochemicals in 1975 is equivalent to only 2% (by weight) of the probable domestic petroleum and natural gas requirements. Throw in liquid hydrocarbons degraded to fuel gas and you come up with only a 0.7% higher figure. Now include all fuel for the operation of the petrochemicals plants, and total hydrocarbon requirements still amounts to a low 5.5% of the petroleum and natural gas requirements. (The comparable 1950 figures are estimated to be about 0.7% and 1.9%.)

The Commission, in its 1975 requirements, allows for what it calls a "phenomenal" growth of plastics.

In table II the long-range forecasters summarize hydrocarbon raw material requirements for eight end-use groups. Plastics stands out among the group as the large-volume consumer of petrochemicals. Benzene and ethylene, (needed for phenol, styrene, polyethylene) account for nearly 80% of the hydrocarbon raw materials required for plastics by the three-quarter-century mark. By that year, too, according to the Commission, nearly 50% of the hydrocarbons used in making chemicals from petroleum will be required by the plastics industry alone.

But in all its crystal-ball gazing into the future of petrochemicals requirements, the government-hired experts tack on a raft of qualifying assumptions, among them:

- The industry will develop under an "armed peacetime" economy.
- There will be no open war.
- No allowance has been made for any serious economic recession.

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Isophthalic's Bid

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Xylenes are produced concomitantly with benzene as naphthenic hydrocarbons are processed into the desired aromatic by platforming and Hydroforming. The mixed xylenes must be separated into their isomers; generally ortho has been separated from the mixture of other isomers and ethyl benzene used for enriching gasoline.

Ortho xylene finds a market as a raw material for phthalic anhydride. Para xylene is separated for oxidation to terephthalic acid, for which there is a growing demand in Du Pont's Dacron synthetic fiber based on terephthalic and ethylene glycol. But there is not yet any established large outlet to spur separating the meta from ethyl benzene for chemical utilization.

Best Bet: Isophthalic acid, which can be made by oxidizing the meta, looks like the best bet, and that's why Oronite is producing it in a small pilot plant to test market. As yet, the company is supplying only those firms willing to assist in the evaluation program. While the price seems steep now, odds are that isophthalic, produced in commercial quantities, will initially sell for only a few cents more per pound than phthalic.

The new chemical is competitive with phthalic, use-wise, in surface coatings and plasticizers—which account for 85-90% of all current phthalic applications. Although isophthalic is not a dye intermediate and won't compete with phthalic there, it has properties that promise other outlets. The linearity of its molecule and the fact that it does not form the low molecular weight closed rings which characterize phthalic reaction products with polyhydric alcohols should lead to development of uses beyond the scope of phthalic.

Most likely uses: fast-drying thermally stable oil modified alkyd resins (paints, varnishes and auto and machinery enamels); low-pressure laminating polyesters (major constituents in glass fiber bonding agents and sandpaper adhesives); polyamid resins (industrial molding compounds and nylon 66-type fibers); alkyd oils (printing inks and architectural finishes); plasticizer esters and unsaturated polyesters.

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Aviation Supply Office, 700 Robbins Avenue, Philadelphia, Pa.			
August 18	B54355B	720000 lbs.	Paraffin wax fully refined, spec. VV P 121B
Philadelphia Quartermaster Depot, 2800 South 20 Street, Philadelphia, Pa.			
August 18	23B	10000 gal.	Mothicide liquid

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Item	Amount	Dollar Value	Supplier — Location
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The Navy Purchasing Office, New York, N. Y.			
Calcium carbide	520,000 lbs	30,280	Linde Air Products Co., Div. Carbide & Carbon Corp., New York, N. Y.
Alcohol, ethyl, denatured	145,000 gal	91,550	Lac Chemicals, Inc., Culver City, Calif.
Disinfectant, germicide and fungicide	14,928 gal	43,457	Gallowhur Chemical Corp., 801 2nd Ave., New York, N. Y.
Carbon tetrachloride, tech.	23,335 gal	30,593	Octagon Process, Inc., 15 Bank St., Staten Island, N. Y.
Carbon tetrachloride, tech.	30,000 gal	45,650	Wilco Co., 4426 Bandini Blvd., Los Angeles, Calif.
Chemical Corps, U. S. Army, New York Chemical Procurement District, 180 Varick St., New York 14, N. Y.			
Alcohol, ethyl denatured, grade III	118,800 gal	69,373	Publicker Inds., Inc., 1429 Walnut St., Philadelphia 2, Penn.
Alcohol, ethyl denatured, grade III	78,408 gal	50,024	Frank Samuel and Co., Inc., 24 State St., New York 4, N. Y.
Hexachlorethane class A, unground	225,941 lbs	38,602	Canadian Commercial Corp., Ottawa, Canada
Aviation Supply Office, 700 Robbins Avenue, Philadelphia 11, Penn.			
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Enamel	20,300 gal	33,132	Hub Paint & Varnish Co., Inc., 47-38 Fifth St., Long Island City 1, N. Y.
Cement, adhesive	19,200 gal	47,494	The Arabol Manufacturing Co., 110 E. 42 St., New York 17, N. Y.
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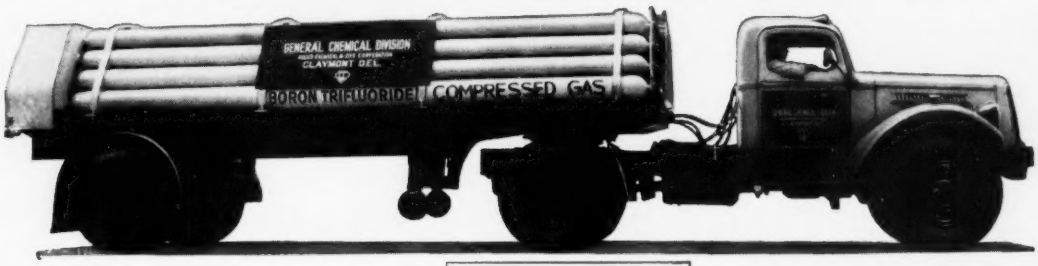
BORON TRIFLUORIDE

in Many Forms...in Tonnage Quantities*



A LABORATORY CURIOSITY less than a decade ago, now an industrial chemical of tremendous significance as a catalyst—that is the story of Boron Trifluoride as developed by General Chemical's fluorine research program.

Today, the catalytic properties of Boron Trifluoride . . . both as a compressed gas and in its various complexes . . . are being utilized in many major industrial fields. These include petroleum, synthetic rubber, resins, solvents, plastics, dyestuffs, metallurgy, etc. With it, many hitherto impossible operating problems involving organic reactions are being solved.

To meet every processing need, General Chemical produces Boron Trifluoride both as a gas and in a wide range of complexes. Recently, General began regularly-scheduled tonnage shipments of the compressed gas by tank truck, marking another milestone in the expanding use of this new industrial chemical.

Listed at the right are many of the reactions in which General's BF_3 is now being utilized. If your operations involve these or similar techniques, you may find it advantageous to investigate Boron Trifluoride and its complexes.

For further information, for experimental samples of any of the products listed, or for confidential discussion of your particular needs, consult the nearest General Chemical office serving you.

Present or Potential Uses of BF_3 as a Catalyst

POLYMERIZATION

ALKYLATION

ESTERIFICATION

ISOMERIZATION

CYCLIZATION

ACYLATION

BASIC CHEMICALS

FOR AMERICAN INDUSTRY

* GENERAL CHEMICAL'S BF_3 PRODUCTS

Commercially Available in Tonnage Quantities

Compressed Gas	
Phenol Complex	**(Liquid)**
Etherate Complex	**(Liquid)**

Available in Limited Commercial Quantities

Ammonia Complex	**(Solid)**
Diacetic Acid Complex	**(Liquid)**
Di-normal Butyl Ether Complex	**(Liquid)**
Dihydrate	**(Liquid)**
Piperidine Complex	**(Solid)**

Other Complexes

In addition, extensive research and production facilities place General Chemical in a preferred position to work with you in development of other BF_3 complexes to meet individual specifications.

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

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Offices in Principal Cities from Coast to Coast